

MOTOR AGE

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PIERCE WINS CHICAGO ECONOMY TEST!



COMMITTEE EXAMINING FUEL TANKS BEFORE THE START

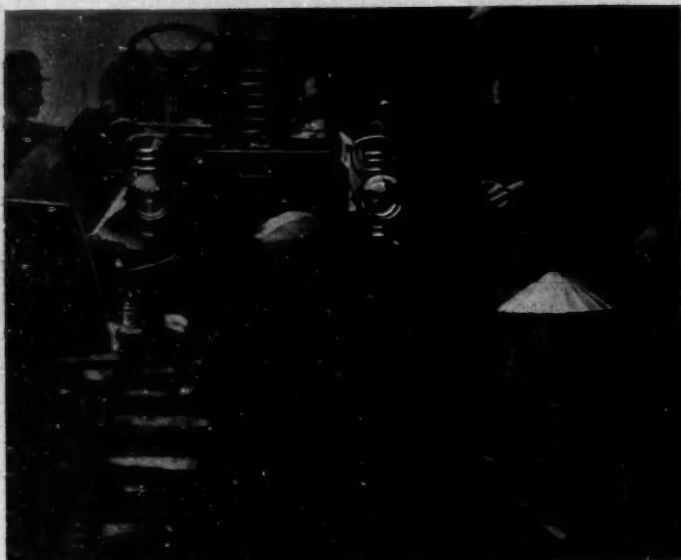
CHICAGO, Oct. 20—Carrying seven people a distance of 50.2 miles on 2 gallons 23 ounces of gasoline, a 28-32-horsepower Pierce Arrow, entered by Henry Paulman and driven by Paul Hoffman, won the economy test from Chicago to Cedar Lake, Ind., Thursday, which was promoted by the Chicago Automobile Trade Association and the Chicago Motor Club. To make the performance even more remarkable the Pierce made the trip under conditions that were decidedly against good work in the economical line, starting out in a drizzle and running into a blinding rainstorm before the trip was half over. It was a grand performance by the motor and a still more remarkable bit of driving on the part of young Hoffman. From the time he got the word at Michigan avenue and Thirteenth street in Chi-

cago, until he pulled up on the long white stretch of road on the east side of Cedar Lake, Hoffman only spoke twice. He took every advantage of the road conditions, coasting when there was the slightest opportunity to save a bit of fuel by doing so, while he resolutely stuck to the street car tracks, preferring to ruin his tires if necessary in order to avoid swinging in and out of the tracks. At corners he went around as closely as possible and did not overlook one single bet to economize on the fuel proposition. Nursing his motor all the way, Hoffman devoted all his attention to getting to Cedar Lake on the least amount of gasoline possible: "He's a clam," said Charles E. Gregory, chairman of the runs and tours committee of the Chicago Automobile Club, who acted as observer. "Maybe he is," retorted Paulman, "but he was out to win an economy test, not to conduct a debate." It was by these careful tactics that Hoff-

man won the contest in which eighteen different makes of motor cars, represented by twenty-five machines, took part. The victory was only in keeping with the practice work of the Pierce, for Hoffman had gotten as high as 26 miles to the gallon in his work on the city streets. That was



THE JEWELL FIRST AWAY



REO ON THE GASOLINE PLATFORM

under favorable conditions, however, so his 22 miles to the gallon in the actual contest was in line with the practice stunt on the boulevards.

Another remarkable thing in connection with the Pierce's win was the fact that it was achieved over a field which included four air-coolers; an Aerocar, which, it will be remembered, won at Minneapolis; a Franklin, which scored a marvelous mileage in the New York affair; the Frayer-Miller, which was second in both these events, and the Premier. However, the air-coolers demonstrated how formidable they really are by landing second and third with the Aerocar and the Premier. Fourth in line and second of the water-coolers was the Silent Knight, which made a wonderfully good run on 2 gallons 3 quarts 14 ounces. So far as actual mileage honors went, the little Reo runabout, carrying four people, two of them on the folding seat in the rear, carried off the best rating, making the trip on 1 gallon 3 quarts. This was



IN THE RAIN

just 4 ounces better than the Premier, but the latter carried more weight, so got higher in the final standing. A 20-24-horsepower Pope-Toledo came into the limelight with 2 gallons 6 ounces. At the conclusion of the test there was not a murmur of protest from any of the contestants and the prize was awarded to Henry Paulman without a protest.

That the test should have been held at all on the day originally scheduled is now the wonder of the hundred people who took part in it. The day previous was an ideal Indian summer day—fleece clouds, a warm sun, good roads and all that—but Thursday certainly was a Jonah day, for before daylight it started to drizzle, so that for some hours Chairman Gunther was on tenterhooks. Finally he consulted the weather man and discovered there was a chance for it clearing up in the afternoon, so he stood by his guns and ordered the officials to prepare to go through with the affair. At 11 o'clock, the hour set for



COMMITTEE SUPPLYING FUEL

the fuel committee to begin filling the tanks, the drizzle was still there and also half a dozen cars. The entrants were game, so much so that they caught the fuel committee unprepared, the platform on which the cars were to run to be filled with gasoline not having been constructed. Hayden and his colleagues got busy at once and by noon they were ready to load up. The Standard Oil Co. had sent a tank wagon to the scene of action and with plenty of fuel on hand the task was comparatively easy. A car would be run upon the platform, its tank filled, then Hayden would seal it with bits of tape and a wad of sealing wax. Because of the delay occasioned by the platform no attempt was made to line up the cars on Michigan avenue. The 2-minute gap between cars was also abandoned, the machines being sent on their way as soon as they were ready. Brick Kuhn, who had been given No. 1 for his Jewell runabout, was ready first and in the drizzling rain, which would have scared out others than enthusiastic motorists, he set out on his long journey to Cedar Lake. Others were quick to follow, so that by 2:42 p. m.



the last car was on its way. By this time it had stopped drizzling—it was then raining torrents, so the back mark cars labored under difficulties that the others avoided. This was shown in the case of some of the big cars in all sorts of carburetor troubles caused by mud and water being scooped up from pools of water that formed on the macadam out in Indiana. One of the first to bump into this sort of trouble was Walden W. Shaw, in the Berliet. He also got water in his gasoline, but he



BEAUTIFUL CURVE IN THE ROAD BETWEEN CROWN POINT AND CEDAR LAKE

pluckily overcame his difficulties and went on, finishing ninth in the final standing.

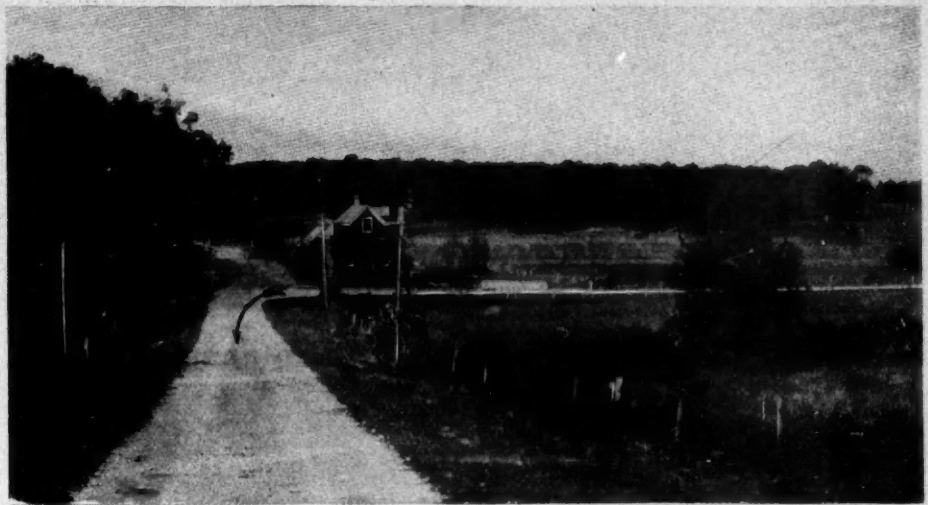
Chairman Gunther, in his red and black 40-horsepower Rambler, bumped into the same kind of a mess which handicapped him, so that he was put out of the reckoning, although finishing. Thomas B. Jeffery, in another big Rambler, avoided all this combination of mud and water and checked in with a consumption of 3 gallons. on, finishing ninth in the final standing. Charles P. Root in a Dorris was one of



the unfortunates in the same class with Shaw and Gunther and had to take his carbureter down four times, causing delays which forced him to chuck it near Ross, although he, too, finished, but outside of the time limit of 5 hours. Knight in the Silent Knight had trouble with his oiler and also lost the road, but

kept his footing enough to go on and land a very creditable fourth. Walter L. Githens in the Stearns had all sorts of ignition troubles and did not get to Cedar Lake until 1 o'clock in the morning. Githens, Root and Kuhn were the only ones of the twenty-five starters who did not report to the fuel committee. Thirty-four cars had been entered for the contest, but so far as known only a couple of the nine scratched were withdrawn because of adverse weather conditions.

Despite the heavy rain the roads from Chicago to Cedar Lake were comparatively good. Of course, the going through South Chicago, where street car tracks abound, was in its usual horrible condition, but once past that place no complaint could be made outside of the water on the highways. Down in Indiana it is all macadam, anyway, so the rain did not handi-



LAST TURN INTO FINISHING STRETCH NEAR CEDAR LAKE

cap the contestants much outside of those who had carbureter trouble. The course was well marked, which it had to be, for few of the contestants had ever been over it before, the committee not having decided definitely on the exact route until the last minute. Joseph V. Lawrence drove the confetti car, a big Pierce Arrow, and with him were David Beecroft, chairman of the technical committee of the Chicago Motor Club, and Harold Wheeler, city clerk of Crown Point, who undertook the task of pointing out the route. One hundred pounds of confetti were carried, in addition to a bunch of signs with arrows on them. The arrows proved better than the confetti, for through Hammond the school children scraped up the bright bits of paper as rapidly as the confetti crew strewed it, while down near Cedar Lake a saloonkeeper carefully gathered up a bunch of it and strewed it off on the wrong fork of a road in order to divert trade in his direction. A few got the wrong steer in this direction but the

alert saloonkeeper did not benefit any.

Because of the condition of the mud road leading around Cedar Lake to the Siegler house, which made it almost impossible for motor cars to make it, the finish was on the macadam on the opposite side of the lake. Here the technical committee established its headquarters and here it was Beecroft and his colleague, F. E. Edwards, of the Chicago School of Motoring, refilled the tanks, getting the gasoline consumption of each by measuring the quantity necessary to fill the receptacles. With this quantity known it was an easy task to figure the winners by dividing the total weight of the cars by the number representing the gasoline consumption. The cars had previously been weighed as they passed through Crown Point. The weight was taken with load and this scheme



CONFETTI MAN

avoided the confusion that would have slowed the event had the process been gone through with in Chicago before the start. Each driver was forced to turn in a card with his weight stamped on it, so there

THE CHICAGO-CEDAR LAKE ECONOMY TEST TOLD IN TABLE FORM

No.	Car	Entrant	Driver	Weight with load	Number of passengers	Gasoline consumption	H.P.	Number of cylinders	Bore and stroke	Carbureter	Tire	Merit mark	Ton-miles per gallon
						Gals. Qts. Ozs.							
19	Pierce-Arrow	H. Paulman	P. Hoffman	4675	7	2 23	28-32	4	4 1/4 x 4 3/4	Pierce	Goodrich	8.378	53.42
14	Aerocar	Cornish-Friedberg Co.	C. Friedberg	3360	4	2 1	24	4	4 x 4	Universal	Diamond	5.834	37.33
6	Premier	R. M. Owen & Co.	H. L. Hammond	2640	4	1 3 4	16	4	3 1/4 x 4 1/4	Premier	G & J	5.788	37.05
26	Silent Knight	Knight & Kilbourne	C. Y. Knight	4225	5	2 3 14	35-40	4	4 1/2 x 5 1/2	Schebler	Continental	5.771	36.93
21	Haynes	C. W. Birchwood	C. W. Birchwood	3700	5	2 2 6	30	4	4 1/2 x 5	Climax	Diamond	5.674	36.81
10	Pope-Toledo	O. F. Weber Co.	G. Schoeneck	2720	4	2 6	20-24	4	3 1/2 x 4 1/2	Pope-Toledo	Goodrich	5.44	33.22
9	Rambler	T. B. Jeffery & Co.	E. Collier	3600	4	3 27	40	4	5 x 5 1/2	Rambler	Fisk	5.078	32.5
33	Apperson	N. H. VanSicklen	C. F. VanSicklen	4750	6	3 2 27	40-45	4	5 x 5	Apperson	M. & W.	5.000	32
16	Berliet	W. W. Shaw Co.	J. Buchanan	3825	5	3 17	24	4	3 1/2 x 4 1/2	Berliet	Michelin	4.894	31.32
23	Simplex	Hamilton Auto Co.	B. C. Hamilton	4000	5	3 1 26	30	4	4 1/2 x 5 1/2	Simplex	Continental	4.524	28.95
2	Reo	R. M. Owen & Co.	O. K. Wright	1960	4	1 3 8	8	1	4 1/2 x 5	Reo	Goodyear	4.278	28
4	Franklin	O. K. Wright	O. K. Wright	2150	4	1 3 29	12	4	3 1/2 x 3 1/2	Franklin	M. & W.	4.249	27.08
12	Bulck	Bulck Motor Car Co.	W. R. Willett	2925	4	2 2 25 1/2	22	2	4 1/2 x 5	Schebler	International	4.232	27.05
13	Frayer-Miller	Jerome A. Ellis	Jerome A. Ellis	3620	4	3 2	24	4	4 1/2 x 5 1/2	Frayer-Miller	Goodrich	4.04	25.85
3	Cadillac	C. H. Foster	G. Farnsworth	1875	2	2 6 1/2	10	1	5 x 5	Cadillac	Hartford	3.757	22.90
18	Queen	Branstetter Motor Co.	H. P. Branstetter	3760	5	4 1	28-30	4	4 1/4 x 4 3/4	Brooks	Goodyear	3.456	22.11
20	Stoddard-Dayton	McDuffee Auto Co.	J. H. McDuffee	3350	5	3 3 22	30	4	4 1/2 x 5	Schebler	Goodrich	3.336	21.35
25	Elmore	Hamilton Auto Co.	G. Thurber	3560	5	4 1 8	30-35	4	4 1/2 x 4	Elmore	G & J	3.224	20.63
11	Bulck	L. Bensinger	L. Bensinger	2860	5	3 3 10	22	2	4 1/2 x 5	Schebler	Goodyear	3.000	19.33
30	Stoddard-Dayton	McDuffee Auto Co.	H. C. Tillotson	2200	2	3 2	15	4	3 1/2 x 3 1/2	Schebler	Diamond	2.864	18.35
5	Rambler	T. B. Jeffery & Co.	J. F. Gunther	4150	5	6	40	4	5 x 5 1/2	Rambler	Fisk	2.7	17.29
7	Rambler	C. S. Neuman	C. S. Neuman	3750	5	6 1	20	4	4 1/2 x 5	Rambler	Diamond	2.943	15



GROUP OF DRIVERS AFTER THE FINISH AT THE LAKE

was not disputing the indisputable facts.

The scene at the finish was out of the ordinary. The heavy rain was still pouring down and the cars came in in such bunches that the committee could not handle them all at once, which made it necessary for some to line up and wait their turn. There was no getting away from that rain and everyone was wet through and somewhat disgruntled. Then it was that the Standard Oil Co. came to the rescue. The driver of the tank wagon took pity on the shivering motorists and started a fire of gasoline. Around this grouped the waiters, drying clothes and blankets, the mists rising up like a real fog. The fire was kept going until the last car had finished, then everyone hiked for Chris Lasson's pavilion on the east side of the lake, for it was necessary to leave the cars and make the rest of the journey by boat. Lasson didn't have to do it, but being a motorist himself he took pity on the bedraggled individuals and ferried them to the other side, where the banquet was awaiting. But before eating there was a raid on the store in the "town" and in no time there wasn't a collar left in stock. Charles Y. Knight emerged from the scramble with a black outing shirt, a new spit of underwear and a pair of overalls. He also borrowed a pair of shoes, but this marooned him in the hotel for the rest of the evening, for

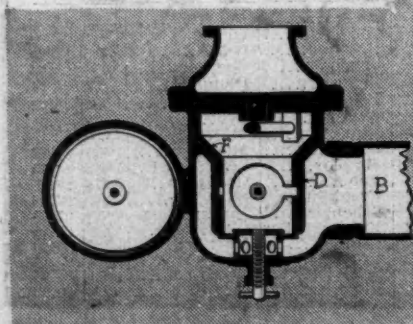
he had promised the storekeeper he would not soil the soles.

The banquet was a banquet in name only, for the hotel man failed to have enough waiters on hand to look after the wants of the hungry ones. The dance, too, fizzled out to a certain extent, while sleeping accommodations were decidedly scanty, with the result that a bunch of noisy chauffeurs made sleep out of the question for those who did get rooms. One of their outrages was to tie four tin cans to the tail of a big Newfoundland dog and chase him through the halls.

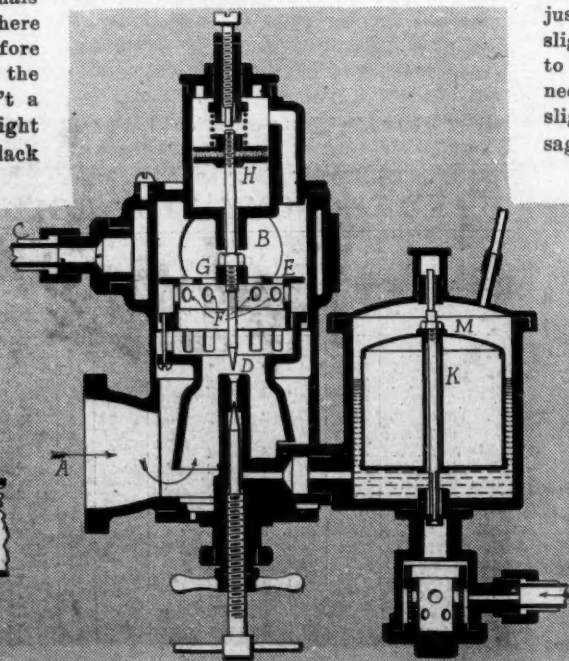
CARBURETERS IN THE TEST

What part of the economy story rests with the carbureter, how much belongs to the car and its many parts, and what is the share due the driver, can never be accurately estimated. All three combine in the performance. The Pierce carbureter used on the winning car is of standard

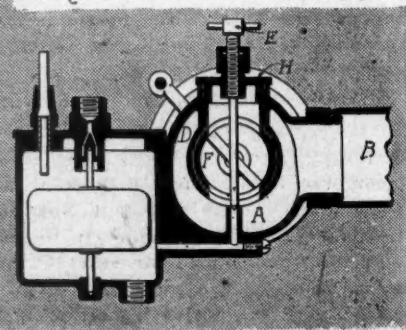
stock design. Its main feature is that all entering air comes through the passage A at the base of the mixing chamber and is directed past the spraying nozzle by a conical thimble D within the mixing box. Above the spraying nozzle is an auxiliary air valve E, the feature of the valve consisting in that it does not permit the entrance of outside air but governs the amount of air which passes the spraying nozzle and also regulates the flow of gasoline out of the nozzle. To control the working of this air valve the top of its stem carries a piston reciprocating in the dash pot H on the top of the mixing chamber, a small spring tending to depress the piston and the cushion of air beneath resisting this. With motor suction on increased speed the air above the piston is rarified, owing to the port or passage connecting this part of the piston with the mixing chamber, and the valve E is raised. In valve E are two series of openings, one G in the valve head and another F in its sides. Ordinarily all of the air passes through the first series on slow speeds, but when the speed increases the series E comes into action passing air that rises outside the chamber D, this air not passing the nozzle. Corresponding with the action of the auxiliary valve is that of controlling the fuel in the nozzle. The auxiliary valve stem is continued downwards where its pointed end rests in the tip of the nozzle, and as the auxiliary air valve rises or falls this pointed end opens or closes the nozzle regulating the gasoline flow. Gases to the motor exit through an opening B, in which pipe is a throttle valve under the control of a governor with connections C. The float K is adjustable on its stem, being threaded thereon, and its level adjustable by the locknut M at the top. The only attention given this carbureter before the test was the lowering of the float slightly on its stem, the adjusting of the governor spring to give a slightly lower action with a range of up to 35 miles per hour instead of 45. The needle valve in the nozzle was raised slightly, restricting the normal fuel passage in the nozzle. The most apparent argument in favor of economy in this carbureter lies in the bypassing of a part of the air on high motor speeds and the controlling of the fuel by the needle valve.



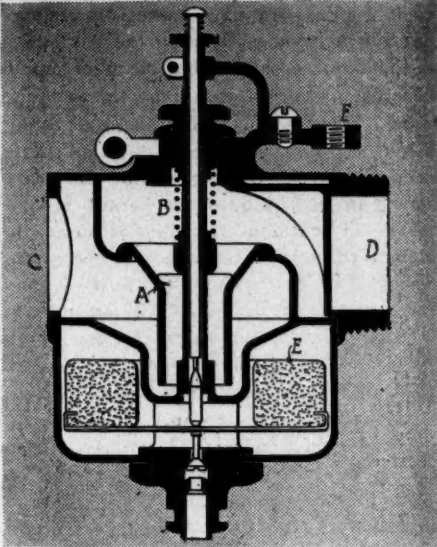
TOP OF REO CARBURETER



VERTICAL SECTION OF PIERCE CARBURETER



SIDE OF REO CARBURETER



SECTION OF UNIVERSAL CARBURETER

carried on the stem of the auxiliary air valve.

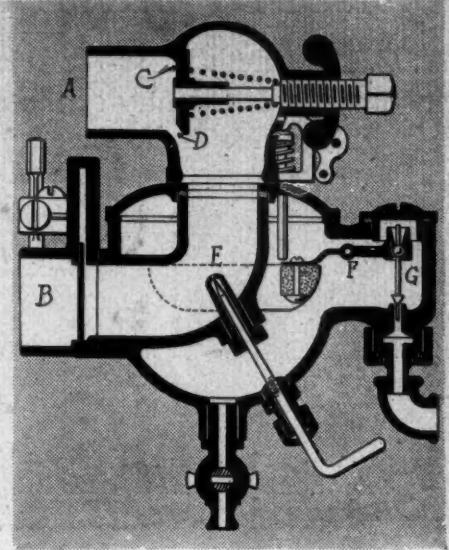
Second place was won by the air-cooled Aerocar, fitted with a universal carburetor. The sectional illustration shows this carburetor to be of the concentric float type, the spraying nozzle rising through a central opening in the ring float E. Air entering through the opening at the left takes a downward course and rises within the thimble auxiliary air valve A, the bottom of this valve surrounding the nozzle and the flaring top resting on a flat seating. With increase of motor speeds sufficient air cannot rise within this thimble A, the result being the thimble is raised off its seating against the tension of the spring B, and air passes into the mixing chamber outside of thimble, this air not passing the nozzle. D marks the exit to the motor. The nozzle is the bottom end of a tube which forms the axis of the auxiliary air valve, the lower end of this tube having four slots through which the gasoline escapes. In action: When the throttle handle F is operated controlling the passage of the mixture through the exit D the nozzle is also raised or lowered, giving more or less gasoline, according as more or less air is given, and in addition to this is the auxiliary air valve which bypasses air past the nozzle, thus tending to maintain a constant vacuum around the nozzle on varying motor speeds. It is notable that in both the Pierce and Universal carburetors the gasoline flow in the nozzle is simultaneously controlled with that of the mixture and air.

The Premier carried off third honors. By the Silent Knight, water-cooled, valveless motor winning fourth place a like honor was accorded to the Schebler model D carburetor, with which it was fitted. Features in this carburetor are the using of a spring-controlled air valve C in the air passage A, thus compelling all of the air to pass this valve a portion at low speeds taking the passageway D, leaving

the valve on its seating, but on higher speeds this passage not being of sufficient size the valve C is brought into action. The action of the needle valve G regulating the entrance of gasoline into the float chamber is rendered sensitive by having it actuated through the lever F pivoted near its center and with one end secured to the horseshoe-shaped float. As in the Universal, a spraying nozzle E is located in the center, mounted angularly, however, of the float and is readily adjusted from the outside. What replacements, other than the ordinary, were made in this carburetor does not appear, but it is evident the only adjustments lay in the varying the tension of the air valve C and the position of the needle valve E in the nozzle.

Honors of using the least gasoline on the run rested with the Reo, using a carburetor made by the company. The Reo is of the separate float type. Air entering by way of passage B fills the ring-like space A within which is a casing D for carrying the barrel-shaped throttle F with a circular opening surrounding the nozzle and another diametrically opposite to it for controlling the passage to the motor. When the throttle is wide open these openings are above each other, the throttle on top; but with speed reduction, the barrel being turned, the air opening around the nozzle is reduced until a mere slit in the barrel for the needle remains and a similar slit permits mixture passing to the motor. The float stem carries a needle valve on its upper end governing the flow of gasoline into the chamber. The mixing chamber is a cylindrical space with the spraying nozzle slightly raised from the bottom in the center, the air entering through a screened opening at the side opposite the float chamber and the mixture passing to the motor through a throttled opening placed horizontally and at right angles to the air opening.

The car using the second least amount of gasoline was the Pope-Toledo, fitted



SECTION OF SCHEBLER CARBURETER

with a standard type of Pope carburetor. Two parts enter into it; a vertical float chamber at one end and a horizontal cylindrical mixing chamber. Rising from the base of the mixing chamber is the nozzle with its top guarded by a needle valve depending from the top side of the mixing chamber and adjustable therefrom. Sliding in this mixing chamber is a barrel throttle, waterjacketed, and with slots at one end of the barrel for regulating the inflow of air and slots at the other end, that adjacent to the float chamber, for regulating the passage of mixture to the motor. The mixing chamber adjacent to the latter slots is enlarged diametrically, giving a balanced throttle effect, so that there is not any binding of the barrel in its casing by the suction of the motor. The float is loose on its stem, operating the needle valve on the bottom of the stem through the medium of a couple of levers, the inner ends of which bear up against a flange on the float stem and the outer ends borne down by the weight of the float.



FLASHLIGHT PHOTOGRAPH TAKEN AT THE WEIGHING-IN STATION

MUDDY DRIVE FOR BRAZIER CUP

W. C. Longstreth, in 50-Horsepower Maxwell, Wins Fourth Annual Cross Country of the Automobile Club of Philadelphia, Only Three of the Seven Starters Finishing

Philadelphia, Oct. 22—In the face of conditions all but prohibitory, the fourth annual cross-country run of the Automobile Club of Philadelphia for the Brazier cup, was won on Saturday last by W. C. Longstreth in a 50-horsepower Maxwell in 5 hours 54 minutes. The air-line length of the course, which is an unequal-sided quadrilateral—with Philadelphia, Doylestown, Quakertown and Pottstown at the four corners—is about 92 miles. By the most direct roads, however, the total distance is 108 miles. Apart from the necessity of checking in at the four points mentioned, the contestants were given carte blanche to select the roads they considered most likely to land them in front. The affair was a handicap, the smaller cars being given liberal secret allowances; cars under 14 horsepower had to carry two passengers; between 14 and 24 horsepower, four passengers, and over 24 horsepower, five passengers. One condition called for the prompt disqualification of any contestant who might be stopped for violating local or state speed laws.

On Thursday, when entries closed, thirteen club members had signified their intention of starting, but when Saturday morning dawned with a nor'easter already 24 hours old putting in extra licks, six of the unlucky number succumbed to frigidus pedalis. At 7:57 a. m. the committee sent off the first starter, G. L. Mayer's 50-horsepower Thomas; then came T. K. Oguri's Maxwell runabout, at 8:03; Horace Allen's Buick, 8:10; D. W. Harper's Stanley steamer, 8:15; W. C. Longstreth's Maxwell, 8:20; C. W. Kelsey's Maxwell, 8:25, and W. T. Smith's Thomas, 8:30. The rain was coming down in a steady slant, and waterproofs were at a premium. Mayer's Thomas was of the turtle-back variety and had seats for but two. According to the conditions, however, its 50 horsepower called for five passengers, and the remaining three hung on as best they could, and received a shaking up and a drenching with water and mud they will remember for the rest of their lives. Three women—Mrs. Horace Allen and Mrs. Laurence P. Dickey in the Buick, and Mrs. M. P. Smith in Smith's Thomas—started, but none of them was among the finishers. Indeed, but three of the seven cars completed the course, and those which did had troubles of their own, especially on the country roads on the second and third legs, from Doylestown to Quakertown, and from the latter place to Pottstown. Longstreth, the winner, had great good luck. He started fifth, 5 minutes ahead of Kelsey, the favorite, and just beyond Willow Grove, 14 miles, he passed Harper's Stanley, and a few miles

farther along, Oguri, the club's Jap member, was left behind. Kelsey, although he had lost several minutes being hauled out of a ditch by the driver of a cart, was but 3 minutes behind Longstreth at Doylestown, and the latter had picked up 8 minutes on Mayer, whose "ballast" was hanging on for dear life as the Thomas flew through the Bucks county capital.

Just before Quakertown was reached Kelsey passed Longstreth, checking in 15 seconds ahead of his fellow-Maxwellite. They learned here to their surprise that Mayer's Thomas, which had left the last station 15 minutes ahead of them, had not yet passed through—one of the numerous instances where, with several routes to choose between, the "dope" had gone astray. The Thomas, however, hove into sight before the Maxwells cleared the town. Kelsey rapidly drew ahead, but with bad judgment selected the poorest of two roads to Pennsburg, and when Longstreth was approaching that town he popped into view just ahead, having covered several additional miles over "fierce" roads. Beyond Pennsburg Kelsey, following the directions of some yokels who put him wise as to a short cut to Pottstown, again went astray, and Longstreth again took the lead, only to be caught again by the persevering Kelsey. Just here, however, the latter began to have tire trouble, and lost fully 15 minutes while Longstreth was plugging away through the storm. Before Kelsey could get going again the Thomas came along and faded away in the mist and rain.

Meanwhile Longstreth had taken the wrong road and reached Pottstown but 2 minutes ahead of Mayer's Thomas, at 11:45. Harper's Stanley also arrived there ahead of Kelsey's car. Oguri, Allen and Smith straggled in at intervals, all reporting having lost much time in an effort to secure good going and the shortest route. One of the late ones had gone so far astray as to be well on the road to Allentown before set right. The conditions allowed an hour's stop for lunch at Pottstown—none of the time consumed at checking points was counted in the elapsed time—but Longstreth pushed on, while Mayer's passengers decided to wash some of the filth off their features and get a bite of lunch. This stop of Mayer's also

panned out fortunately for Longstreth, for the rain, which had slackened up for a while, got going again good and hard while the former was yet miles away from the finish, and when Longstreth was within sight of the city. Shortly after 2 o'clock the latter came booming down Spring Garden street and swung into Broad street, passing through big crowds of spectators who assembled along the row to watch the contestants come in. At 2:14 to the dot the winning Maxwell dashed up in front of the clubhouse at 1409 Walnut street and checked in with the officials there. Mayer registered at 3:23, and Kelsey at 3:57, just 3 minutes before the time limit expired. The others died off between Pottstown and the finish.

A White steamer, with Assistant Manager E. C. Johnson, of the local White garage, at the wheel, carrying several pressmen, started at 10 a. m. and finished shortly after 4 o'clock, having done several first aid stunts during the 108-mile run and lost over a half-hour hunting gasoline at Narberth.

PENNSYLVANIA ROAD DOPE

Washington, D. C., Oct. 19—Facts and figures about the public roads of Pennsylvania have been gathered by the federal office of public roads, and show that in 1904 there were 99,777 miles of public roads in the state, of which mileage 9 miles had been surfaced with stone under the direction of the state highway department, 1,051 miles surfaced with stone by the various counties and townships, and 1,101 miles more or less improved with stone or gravel by various turnpike companies, making in all 2,161 miles of improved road. It will be seen from these figures that 2.1 per cent of the roads have been improved. By comparing the total road mileage with the area of the state, it appears that there were 2.21 miles of public road per square mile of area. A comparison of mileage with population shows that there was 1 mile of road to every sixty-three inhabitants, but only 1 mile of improved road to every 2,916 inhabitants. The township supervisors are authorized by law to levy a tax of not to exceed 10 mills on the dollar on all personal property, trades and occupations for the purpose of constructing and repairing roads and bridges. In 1905 this law was amended so as to permit an increase of 10 additional mills. Each township may levy a cash road tax, incur indebtedness, or issue bonds according to the methods prescribed by law to defray its share of the cost of state-aid roads. There is no statute labor law in

SUMMARY OF PHILADELPHIA CLUB'S CROSS COUNTRY RUN

Car	Owner	Handicap	Start	Finish
Maxwell	W. C. Longstreth	Scratch	8:20 a. m.	2:14 p. m.
Thomas	G. L. Mayer	Scratch	7:57 a. m.	3:23 p. m.
Maxwell	C. W. Kelsey	Scratch	8:25 a. m.	3:57 p. m.
Maxwell	T. K. Oguri	1 h. 45 m.	8:03 a. m.	No time taken
Buick	Horace Allen	35 m.	8:10 a. m.	No time taken
Stanley	D. Walter Harper	15 m.	8:15 a. m.	No time taken
Thomas	W. T. Smith	Scratch	8:30 a. m.	No time taken

Pennsylvania, as there is in many states, providing that all able-bodied male persons between certain ages be required to work upon the roads a given number of days each year. The whole or any portion of the township road tax referred to above could, however, be paid in work previous to 1905. In that year the legislature provided that any township which abolished the working out of the tax and which required the same to be paid in cash should receive annually from the state 15 per cent of the amount of the tax so collected.

NEW TRADE RULING

Washington, D. C., Oct. 23—Special telegram—The treasury department ruled today that motor cars manufactured by the Peerless Motor Car Co. with the use of various imported parts shall, on exportation, be allowed a drawback equal in amount to duties paid on imported material used, less legal deduction of 1 per cent. The preliminary entry must show the number of cars exported, the marks and numbers thereof, and parts upon which the drawback is claimed. The drawback entry must show with respect to castings the number and name, imported weight and finished weight, waste incurred in manufacturing, with value thereof. The drawback entry must further show the number of spark plugs, spark coils, gaps, batteries, springs, contact boxes, etc., used in exported motor cars, describing the several parts as described in the import invoice; further, that exported cars were made of imported materials and in the manner set forth in the manufacturer's sworn statement of August 21 last, filed with the collector of customs of Cleveland. In liquidation the weight of imported iron and steel castings which may be taken as a basis for the allowance of the drawback may equal that declared in the drawback entry, provided it shall in no case exceed the weight specified in the manufacturer's sworn statement. There shall be deducted from the drawback payable on each model 14, 59½ cents, and each model 15, 82.7 cents, which is the value of the waste.

STRENUOUS ROAD TEST

Boston, Mass., Oct. 24—Special telegram—W. H. Doble has made a wager with Frank J. Tyler, of the Maxwell-Briscoe-Boston Motor Co., of \$500 that the Maxwell two-cylinder touring car cannot be driven a distance of 2,500 miles over public highways in 7 consecutive days without stopping. Each party has deposited \$500 with J. Fortesque, secretary of the Bay State Automobile Association. The conditions are that the machine used shall be a regular stock car, that the run shall be between the clubhouse of the Bay State Automobile Association, Boston, and the Worcester Automobile Club, and that an observer shall be on the car each trip. The start was made from the clubhouse in Boston at 8 o'clock this morning.

MAPS OUT WINTER TRIP

Charles J. Glidden Changes His Plans to Include Washington in His Itinerary

Washington, D. C., Oct. 20—While it has been generally known that Charles J. Glidden intended resuming his chase of the world's mileage record immediately after the running of the Vanderbilt cup race and after he had settled the vexed question of how the Glidden tour problem was to be decided, it was not until the globe-girdler got here that he gave out his exact itinerary. Long ago he announced he would make the trip to Mexico, traveling part of the way on rails, but now he is ready to go into details and name the points he will make. In all his winter's trip will cover 7,071 miles. The itinerary is as follows:

BOSTON TO CHICAGO

	Miles
Springfield	101
New York	139
Philadelphia	92
Washington	143
Philadelphia	143
New York	92
Albany	149
Utica	100
Auburn	76
Buffalo	135
Elie	90
Cleveland	95
Toledo	145
South Bend	160
Chicago	110
	1,769

ROCK ISLAND RAILWAY

Moline	179
Trenton	237
Kansas City	101
Herrington	149
Bucklin	177
Delhart	198
Terrance	221
El Paso	203
Cloudercroft	112
Terrance	142
Delhart	221
Bucklin	198
Herrington	177
Oklahoma	222
Booneville	235
Little Rock	119
Hot Springs	60
Booneville	179
Oklahoma	235
Chickasha	59
Dallas	211
Fort Worth	32
	3,667

INTERNATIONAL GREAT NORTHERN

Waco	95
Houston	200
Galveston	48
Austin	256
San Antonio	80
Laredo	153
	832

NATIONAL LINES, MEXICO

Monterey-Salttillo	235
San Luis Potosi	242
Queretaro	159
Mexico City	167
	803

SUMMARY

Highway	1,769
Rock Island	3,667
International Great Northern	832
National Lines Mexico	803
	5,302
	7,071

Mr. Glidden was here during the week for the purpose of looking over the roads in this vicinity and mapping out this section for his forthcoming tour from Boston to Mexico City. It was his original intention to go from Boston to Chicago and thence to President Diaz' land, but

he now intends to come by way of New York, Philadelphia, Baltimore and Washington and thence to Chicago, from which city he will go direct to Mexico. Mr. Glidden told the Motor Age man the change was made for the reason that he had never before included the national capital in any of his tours, and the present was too good an opportunity to lose. His plans call for a trip through Maryland over the old national pike, with side trips to Pittsburg and other places. The trip from Chicago to Mexico City will be made on railroad tracks. Mr. Glidden will leave Boston on November 1.

SHOW ALLOTMENTS OUT

New York, Oct. 22—Diagrams showing the space allotments for the Grand Central palace exhibition, to be held December 1 to 8, have been issued. That the earlier date and changed location has met with the approval of the manufacturers and the public is shown by the fact that there were no less than 266 applications for space in this year's show. While more than 55,000 square feet of space was available in the exhibition hall and galleries at the palace, there were applications for over 66,000 square feet of space, and large as the building is it was found impossible to meet the exhibitors' demand for room. As a result the show committee of the club had to refuse the applications of thirty-six exhibitors, and cut down the space applied for by something like 11,000 square feet. In spite of the reduction there will be 230 exhibitors in this year's show, including ninety-four manufacturers of motor cars and 136 exhibitors of accessories. The motor car exhibits will include the thirty-eight manufacturers who comprise the American Motor Car Manufacturers' Association, eighteen foreign cars and forty-eight other American manufacturers of motor cars.

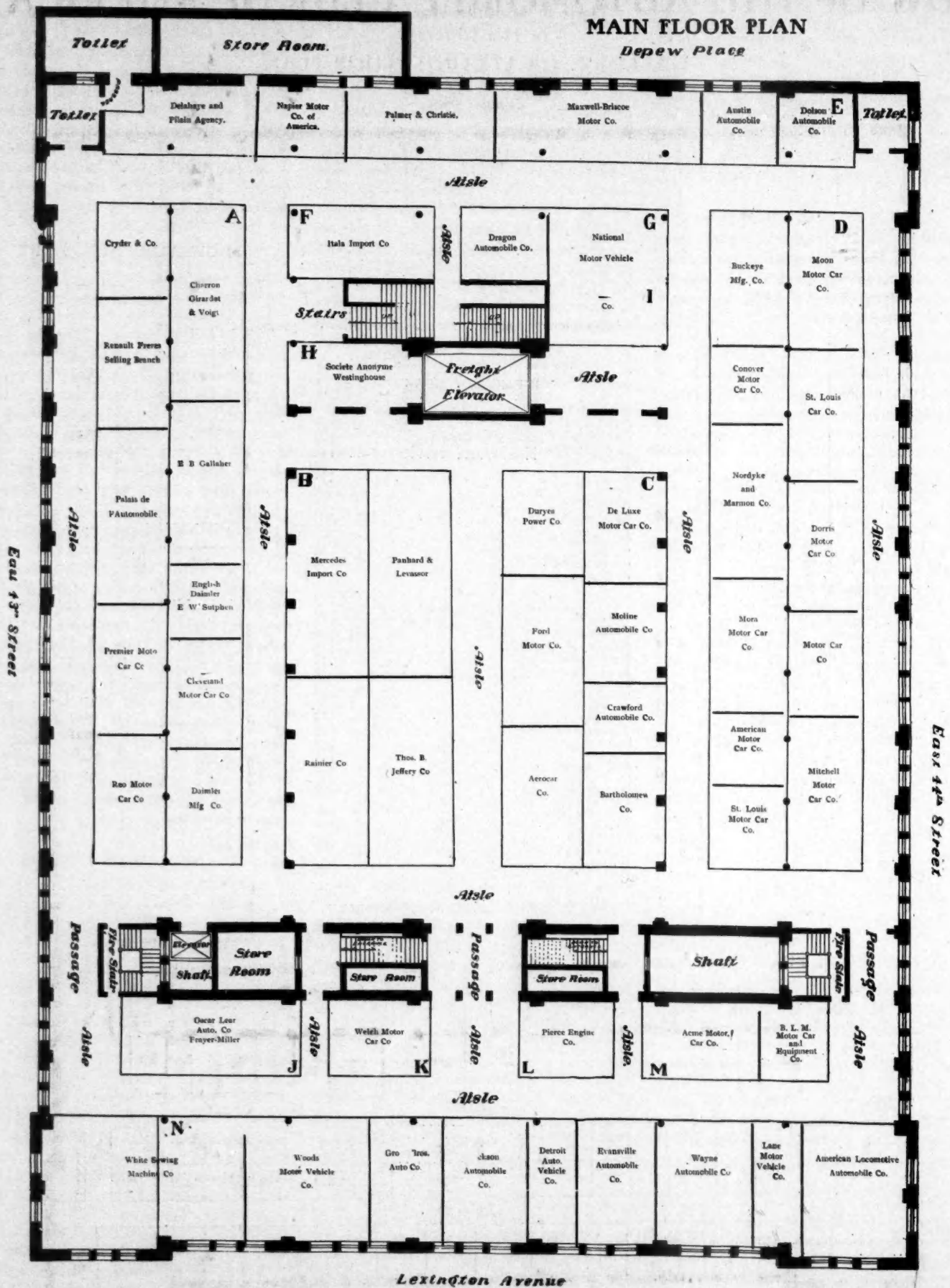
N. A. A. M. TOUR POSSIBLE

New York, Oct. 24—Special telegram—It would now seem that the responses to the queries sent to N. A. A. M. members as to the advisability of the association promoting next year a reliability test of its own independently of any Glidden cup competition and A. A. A. tour were in a majority so far as majority count. All day yesterday President Cutler and Manager Miles were closeted at headquarters with Albert L. Pope, S. T. Davis, Jr., S. D. Waldon, L. H. Kittridge and Windsor T. White, of the contest committee, confessedly engaged in framing up rules for such a test to be submitted to the executive committee at its December meeting. It was announced that there would be nothing to make public as to the rules or the intentions of the association in the matter until after the meeting in question. It is a safe guess, however, that there will be a separate contest and that the Glidden cup will not figure in it.

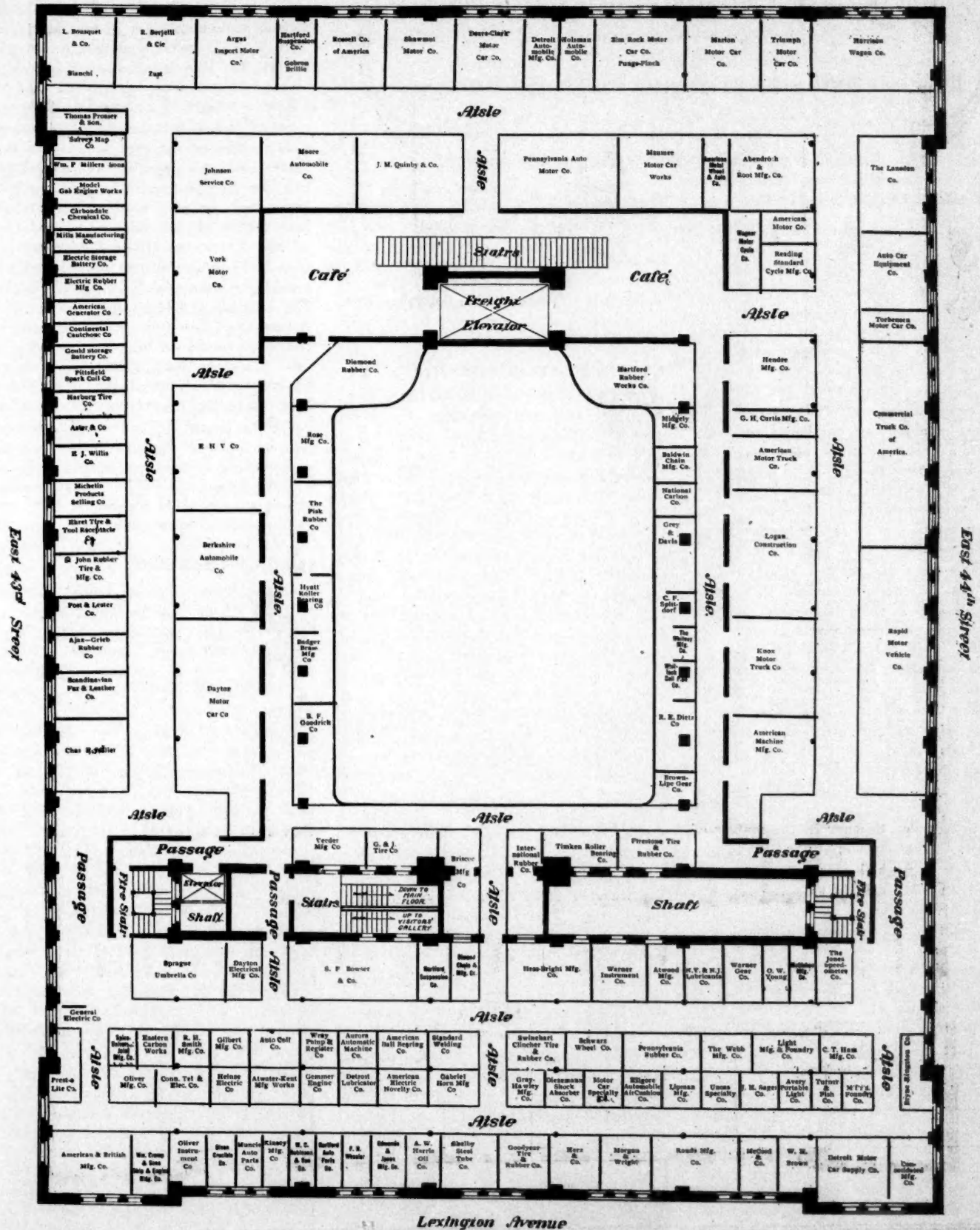
SPACE ALLOTMENTS FOR SEVENTH ANNUAL

MAIN FLOOR PLAN

Depew Place



Depew Place





MOTOR AGE

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CHICAGO'S ECONOMY TEST

SUCH TESTS as that promoted in Chicago last week serve not only as a tonic for the trade but are convincing arguments in favor of the motor car and serve as practical lessons for the designers and builders. If the management had ordered especially miserable weather conditions, such conditions could not have fulfilled expectations more fully than did the weather man on this particular occasion; but from a test point of view the conditions were ideal, though by no means conducive to illustrating economy in the matter of fuel consumption. Economy of operation is but one of the things the prospective purchaser of a motor car considers, it is true, but it is a vital question and becoming more important every day. The test of last week illustrated the fact that twenty-two cars carried ninety-nine people a total of 1,100 miles at a cost for fuel of but \$10.72, the total fuel consumption being 71 gallons 2 quarts 8 ounces. Compare this with the fuel consumed by a locomotive and the utility of the motor car stands out strongly. It must further be remembered that these twenty-two cars made a total weight of 72,055 pounds. Had the day been anything that could have approached decency in the matter of weather conditions it is pretty safe to predict that a much better showing would have been made. It is true the run was comparatively short, but under the conditions existing it was one of extreme trial and that all the cars that started went through without more than minor troubles is a testimonial for the American-made car that should not be overlooked. The fuel used in this test was the ordinary stuff that everybody buys—right out of an ordinary tank wagon belonging to "the system." It was not claimed to be better than 68 and it may have been of a lower grade. The fact that a big seven-passenger car traveled 50 miles on a trifle over 2 gallons of this fuel and that a run-about went the same distance on a little over 1 gallon is sufficient argument that it is possible to obtain good results on what is known as a low grade of fuel, pop-

ular opinion to the contrary notwithstanding. Future economy tests will not be necessary to show the buying public that the cost for fuel to operate a motor car is exceedingly small; they will prove of value only to the maker in his endeavor to reduce the cost of operation to the minimum and for the sake of comparison.

EDISON'S LATEST SCHEME

THOMAS A. EDISON is a great man and has given the world the benefit of a massive intellect; nor is it to be supposed he is through inventing good things and in giving the world the benefit of his discoveries. Mr. Edison is now said to have perfected a battery that will solve the municipal commercial traffic question and will do other wonderful things—a battery that will run a vehicle 100,000 miles after an installation cost of only \$200. Mr. Edison has been quoted before on the battery question and has denied making some of the wild statements credited to him. There were thousands of people who had such implicit confidence in Mr. Edison that they decided to wait until his battery made its appearance before investing in motor cars with their present-day ills. They have waited. Nobody doubts that when Mr. Edison speaks he knows his ground and that he would not utter a word until he did know whereof he spoke. The question now is not whether Mr. Edison has really made so important a discovery as is credited to him, but whether he has authorized anybody to put into print the words he is alleged to have spoken. It is known Mr. Edison has been working for years on the theory that cobalt would do what he desired in the matter of a battery and it is known he has been hunting for this article. He is alleged to have proved that cobalt not only will do the work sought, but that it has been found in large quantities and that it can be handled commer-

cially at a reasonable figure. If Mr. Edison will come out and over his own signature back up all he is alleged to have said about his new battery, the motor car world will believe something is to happen in the industry; but it will require Mr. Edison's own signature to prove the case, for a man like Mr. Edison is too wildly quoted by the lay press to make a mere story the truth. It may all be true; Mr. Edison is capable of it if anybody is. If it is true, it will revolutionize things—but did Mr. Edison say all that is credited to him? Sensational reports of what Mr. Edison intended to do have filled the columns of the daily papers for the past decade; a few of the prophesies have been fulfilled but the majority have proved fabrications and as statements having come from the lips of the great wizard have been denied. If Mr. Edison had performed all the wonderful tricks the newspapers have had him perform he indeed would be a wizard—a deep-dyed and double wizard. The trouble is he not only has not performed many of the alleged wonderful tricks but has been busy denying that he even knew anything about them. It will be well, in the light of all that has been credited to Mr. Edison only to have been proved to be fakes of sensational newspaper men, to wait until Mr. Edison actually shows his new battery. It will keep for a while and people need not be alarmed over not being able to procure it so long as the price is forthcoming.

FOREIGN CRITICISM

EXPECTATIONS were realized when the criticisms of the foreign press on the conduct of the Vanderbilt cup race reached these shores—anything savoring of the Yankee is apt to be criticized, whether good or bad. But there is one consolation—good apples are knocked off the tree, not the bad ones. The foreign press is undoubtedly justified in some of its criticism, but it has jumped at conclusions without understanding conditions as they exist on this side of the water. Still, these criticisms show the way such an affair is taken and they must be given reasonable consideration in arranging future contests. It must be remembered by the foreign press that the conditions governing such an affair are totally different from those which would exist in some other country, and due allowance must be made therefor. The management of the race realizes that changes will have to be made ere another event of the kind can be held—aye, it realizes that road races will not do at all, and has set about to take such affairs off the highways and place them where there can be little if any danger to the people and where they will not call for criticism on the part of the non-motoring public, which is an important factor still. Yet, criticism ought to be welcomed by the management, which should profit therefrom.



ENGLISH ON VANDERBILT

A GREAT commotion is being made over the Vanderbilt race on Long Island, because the crowds of New Yorkers who went to see it had not the sense to keep out of the way of cars traveling at 80-odd miles an hour. If reports are to be believed they were even mad enough to crowd the course to such an extent that the racing machines were driven in places through a narrow lane of people. We would be the last to appear to lightly regard the value of human life, but people who are so absolutely out of control as these New Yorkers appear to have been really deserve no sympathy. If they had wandered about on a railway track they would have had none, and we must confess we feel very little for them in this instance, quotes the Autocar.

It is quite evident that the Automobile Club of America does not know how to manage a race, or does not trouble about conducting it properly. It is a pity that crowds of spectators should have got out of hand in the way they did, as there are plenty of foolish people in both hemispheres who have not the sense to discriminate between ordinary everyday motoring and a motor car race. Properly conducted there is no reason whatever why a race should be attended with any danger except to the competitors. The risks even to competitors are not serious when really skilful and practiced drivers are concerned. There is absolutely no excuse for the New Yorkers, as they were well warned.

It cannot be urged that they were not cognizant of the speeds which were likely to be attained. The New York papers had been screaming for some time previously, and had worked themselves and the public into a frenzied pitch of excitement over the eliminating trial, and this frenzy maintained till the race was over. The progress of the events leading up to the race was announced by extravagant headlines of enormous dimensions. Elsewhere we reproduce two specimens of these. It must be remembered that in the eliminating trial American cars alone competed, and that if the papers would rave in this manner about the mere preliminaries, what might they not be expected to do over the actual race itself, in which much faster cars would run? How the race was reported we do not yet know, but, judging from the way in which the eliminating trial was dealt with, it certainly cannot be urged against the American papers that they had not warned the public that motor racing was desperately fast. In the face of such warnings we cannot imagine how people could be such maniacs as to place themselves in jeopardy of being knocked down by these racing monsters.

Wagner, winner of the Vanderbilt cup race, may not be a musician, but he is on the high C, just the same.

Now the argument for and against the six-cylinder car is about to be revived, but let us hope it will be short-lived.

It isn't becoming for Great Britain to do any crowing over the Vanderbilt cup race—she didn't stake anything on the result.

The breaking out of the road record fever may be the means of causing an epidemic of motorphobia among the daily papers; motorphobia is rather catching, it must be remembered.

While the Chicago motorists were ploughing through seas of water and mud on an economy test they naturally thought of how little the weather man was trying to economize in the matter of rain.

That poor individual that was killed during the running of the Vanderbilt cup race doesn't know what an angel he happened to be to the real estate men who have tracts of ground to sell for race course purposes.

Next week the stories of how the motor car played an important part in the various elections in many parts of the country will appear, but whether they will have done anything for the benefit of motoring will be another tale.



Henry Paulman's 28-32-horsepower Pierce Arrow, driven by Paul Hoffman, wins economy test from Chicago to Cedar Lake, Ind., car conveying seven people 50.2 miles on 2 gallons 23 ounces of gasoline; twenty-four start and twenty-one finish.

Private speedway to be used for Vanderbilt cup race and testing purposes planned for Long Island; company capitalized at \$2,000,000, eastern capitalists already having subscribed for \$400,000 worth of stock.

Fourth annual contest for Brazier cup, promoted by Automobile Club of Philadelphia, is won by W. C. Longstreth in a Maxwell; contest is run through heavy rain storm.

Rochester, N. Y., runs off its postponed hill-climb. A. V. Hart's Thomas Flyer and Robert Thomson's Pope-Hartford tying for honors in free-for-all.

Treasury department decides that Peerless Motor Car Co. is entitled to drawback on exported cars in which imported parts are used in its construction.

Frank J. Tyler, of Boston, starts out to drive a Maxwell 2,500 miles in 7 consecutive days without a motor stop.

British trade seeks to effect radical reform in discounts, with idea of stopping payment of ruinous commissions.



FRENCH ON VANDERBILT

PARIS, Oct. 9—Little or no surprise was felt here regarding the outcome of the Vanderbilt cup race. It was felt all along that France stood the best chance of winning, but at the same time it is believed that American cars did not show their real merits and the failure is put down to the fact that sufficient care was not exercised over details and "mise au point."

The quality of the French cars was, of course, unquestioned here, while the German equipment never gave Frenchmen an unquiet moment. The Italians would have stood a better chance, it is thought, had they been represented by more than two makes of cars. The French cars really did better in the Vanderbilt cup than in the grand prix, considering the roads, the organization and the new circumstances under which they ran. For instance, out of twenty-one French cars in the grand prix, only five completed the race, and the proportion is much better in last Saturday's race. Frenchmen are rather jubilant and state that what has happened this year will happen again and for years to come. Until French methods are abandoned and less circumspection is given to the construction of cars, especially to the castings, France will lead the van and America, until it learns to exercise that extreme care characteristic to French makes, will have to follow the leader.

Let it again be brought to the attention of American constructors that the French have not that disdain for foreign workmanship which is sometimes thought they have. The line dividing a winning car from one which does not finish the race is a thin one and although many details may conduce to make a car inferior, yet one detail either inferior, overlooked or caused by bad judgment, will be sufficient to bring failure in its train. Sober-minded Frenchmen recognize that they have not the monopoly of skill either in design or construction, but they all tell the same tale of care, care and care. In nothing more than a racing car does this trait show to advantage in view of the stresses it has to sustain. The result of the race is so gratifying that it is now looked upon here as a splendid advertisement for French cars. The result will, too, the makers here believe, serve to strengthen the position of our makers with those Americans who do not consider what a car costs so long as they receive quality. Judging from this standpoint it is pretty safe to predict that the French and even the Italian makers will prefer to see the race run on American soil again in order to secure the advertising they would receive by winning the cup again, for they feel pretty certain of their ground in the matter of the outcome of any future race.

ROCHESTER SEES GOOD HILL-CLIMB



HILL USED FOR CLIMB BY ROCHESTER CLUB

ROCHESTER, N. Y., Oct. 20—Despite the heavy rainfall of Friday the promise of the earlier days of the week was amply fulfilled today when a clear sky gave almost ideal conditions for the second annual hill-climb of the Rochester Automobile Club. The climb was held on the west hill of the Penfield Dugway, the site of last year's contests, and the motoring world of Rochester turned out to see the sport. Enthusiasts of all ages, from youngsters in knickerbockers to old men whose speed dissipation is confined to the electric victorias, were on hand when the starter's gun sent the first car up the crooked ascent shortly after 2 p. m., and remained until the last car in the free-for-all crossed the tape at sunset. At least 1,000 spectators were grouped on the high banks of the Dugway and scattered along the course, and probably 150 cars, containing many of the leaders in Rochester society, were parked at the top of the hill. More cars were driven by their owners than was the case last year, and the total entry was larger by a dozen cars. The length of the course was 3,100 feet, with an average grade of 6 per cent.

All the events were keenly contested, but the greatest interest was manifested in the free-for-all, in which five cars started. The hill was in splendid condition, the rain of the previous day having effectually laid the dust, and it was expected that last year's record of 48 seconds, made by Charles Soule, of Detroit, in a Pope-Toledo, would be broken. This, however, was not realized, owing to the fact that the course was lengthened this year about 350 feet at the top of the hill, in order to give the spectators a better view of the finish. William Knipper, driving A. V. Hart's 1907 stripped Thomas Flyer, was the first starter in this event. He took the hill at a whirlwind pace but skidded badly on the last turn of the double curve, threw out his clutch and coasted over the tape several hundred feet farther on. Knipper's time of 51½ seconds was duplicated by J. P. Grady in Robert Thomson's stripped Pope-Hartford in a fine climb.

Grady made the double turn at a pace that almost took away the breath of spectators, and it was evident that the machine was doing its utmost. John Meiser, driving Foster & Armstrong's Pope-Toledo just as it was driven in the stock car events, was the only other driver who approached the record of the first two in this event, crossing the finish line in 56 seconds. Storrant, in his stock Stoddard-Dayton, did not equal his time made in class V and was out of the running with the leaders. William McLean made a splendid start with his stripped Oldsmobile and was pounding the hill at a terrific rate of speed when he met two motor cyclists who had escaped the officials at the top on the first turn of the double curve. The over-anxious assistant clerk of course at that point, fearing a disaster, shouted and waved his red flag frantically, with the result that McLean came to a full stop. Sent back by the clerk who had flagged him, the referee, not understanding the circumstances, refused to give him a new start up the hill.

When the tie between Knipper and Grady was ordered run off by Referee Woodworth, Knipper reported for the

start, but Mr. Thomson refused to allow Grady to make the climb again. Mr. Hart entered a claim for the award on the ground that Mr. Thomson had defaulted and, although the referee has not announced his decision, Mr. Hart will probably be awarded the cup.

The driving of Arthur Demmler, who piloted Foster & Armstrong's Pope-Hartford car in the 23-30-horsepower class, was one of the features of the day. Demmler was the first to cover the course in less than 1 minute and his time of 54½ seconds proved to be the second best of the day. Stetzel, who drove Thomas J. Northway's four-cylinder runabout, won out by a narrow margin over George C. Buell's Stevens-Duryea in the 17-22-horsepower class, but found the higher-powered classes too much for him.

Amateurs who drove their cars exceptionally well were Carl W. Storrant; W. J. Graham, whose 1903 Columbia was driven by a two-cycle, three-port marine motor; R. G. Finucane, who drove his older brother's car, and 10-year-old Vernon Adkin, who drove a Columbus in the electric class and took second place by a wide margin over A. V. Hart, an expert driver. All cars entered, except in class VII, were stock cars as catalogued. The trophies were silver loving cups for the winner in each class. The officials were: Referee, Harry S. Woodworth; clerk of the course, George G. Foster; starter, William C. Barry, Jr.; timekeeper, Lee Richmond; assistant timekeepers, Fred E. Mason, Joseph J. Mandery, Rudolph Schmidt.

RESULTS IN FIVE CLASSES IN THE ROCHESTER CLUB'S HILL-CLIMB

CLASS I—16 HORSEPOWER AND UNDER					
OWNER	CAR	WEIGHT	HORSE-POWER	DRIVER	TIME
T. R. Finucane	Franklin	1300	12	R. G. Finucane	1:13½
Arthur McNall	Franklin	1300	12	R. Foote	1:19
CLASS II—17-22 HORSEPOWER, INCLUSIVE					
Thomas J. Northway	Ford	1020	18	N. B. Stetsel	1:07
George C. Buell	Stevens-Duryea	1900	20	John Kelly	1:10
Arthur McNall	Franklin	1300	20	R. Foote	1:12½
T. R. Finucane	Franklin	1300	12	R. G. Finucane	1:13
C. L. Whiting	Buick	1800	22	C. L. Whiting	1:13½
Charles W. Voshall	Buick	1800	22	C. W. Voshall	1:14½
CLASS III—23-30 HORSEPOWER, INCLUSIVE					
Foster & Armstrong	Pope-Hartford	2250	28-30	Arthur Demmler	1:54½
T. J. Northway	Ford	1020	18	N. B. Stetsel	1:05½
T. R. Finucane	Franklin	1300	12	R. G. Finucane	1:10
W. J. Graham	Columbia	3670	24	W. J. Graham	1:13½
A. V. Hart	Haynes	2250	30	A. V. Hart	1:15½
Arthur McNall	Franklin	1800	20	R. Foote	1:19½
J. N. Heberger	Corbin	2000	24	J. N. Heberger	1:21½
CLASS IV—31-40 HORSEPOWER, INCLUSIVE					
Foster & Armstrong	Pope-Toledo	3000	35-40	John Meiser	1:59
T. J. Northway	Ford	1020	18	N. B. Stetsel	1:05
A. O. Fenn	Royal Tourist	3000	40	R. Rowe	1:18
Carl W. Storrant	Stoddard-Dayton	2250	30-35	Carl W. Storrant	1:17½
William H. Craig	Pungs-Finch	2600	28-32	E. Stein	1:59
CLASS V—ABOVE 40 HORSEPOWER					
Carl W. Storrant	Stoddard-Dayton	2250	30-35	Carl W. Storrant	1:57½
A. V. Hart	Thomas Flyer	3200	50	A. V. Hart	1:56½
John S. Bingeman	Stearns	3300	40-45	J. S. Bingeman	1:15½
CLASS VII—FREE-FOR-ALL, INCLUDING RACING AND STRIPPED CARS					
A. V. Hart	Thomas Flyer	2800	60	William Knipper	1:51½
Robert Thomson	Pope-Hartford	2800	28-30	J. P. Grady	1:51½
Foster & Armstrong	Pope-Toledo	3000	35-40	John Meiser	1:56
Carl W. Storrant	Stoddard-Dayton	2250	30-35	Carl W. Storrant	1:52½
CLASS VIII—ALL ELECTRICS					
George J. Bauer	Babcock	1500		George J. Bauer	1:55
T. F. Adkin	Columbus	1500		Vernon Adkin	2:04½
A. V. Hart	Columbus	1500		A. V. Hart	2:33½

GREAT SPEEDWAY IS NOW ASSURED

NEW YORK, Oct. 22—A great motor speedway! A private enclosed course for the Vanderbilt cup race! A 60-mile straight-away, with loops at the ends, giving a 120-mile circuit of macadam 50 feet in width! A magnificent speed course at the very gates of New York, clear of foot passengers and free from horse-drawn vehicles, on which motor cars may be run or raced at their top speed without the pitfalls of speed traps or the menace of constables!

This is the long-time dream of the motorist now likely to be realized if the promises and expectations of many millionaire motoring enthusiasts, backed by proffers of ample cash from these same capitalists of world-wide reputation for great wealth come not to naught.

The appointment by the American Automobile Association directors of W. K. Vanderbilt, Jr., Jefferson De Mont Thompson and A. R. Pardington as a special committee to consider such ways and means as might be submitted for the building of a private course for the Vanderbilt and similar speed contests has brought great and quick fruit. A meeting was held last week at the Lawyers' Club, at which were present the following leaders in the motoring and financial worlds: August Belmont, William K. Vanderbilt, Jr., Ralph Peters, president Long Island Railroad Co.; L. C. Weir, president Adams' Express Co.; Commodore F. G. Bourne, Colgate Hoyt, Jefferson De Mont Thompson, H. K. Burress, W. G. McAdoo, president of the New Jersey Tunnel Co.; Anton G. Rodennyl, A. R. Pardington, Dave Hennen Morris, president of the Automobile Club of America, and Dean Alvord, a big Long Island real estate operator.

At this meeting propositions were presented for speedways in New York, Connecticut and New Jersey, but Long Island seemed to offer the most accessible site because of the bridges and of the proposed boulevard from the Blackwell Island bridge to the city line. Accordingly it was decided that efforts to secure the right of way for the speedway should be made on Long Island. The scheme in outline is to start the speedway at the very gates of town on the city line. Though the proposed site and route will remain a secret for the present for obvious reasons, it can be assumed probably that its accessibility will bear close relation to the terminus of the projected boulevard above named. The speedway will stretch straight-away for 60 miles with loops at the end, forming a practical 120-mile circuit. In the words of A. R. Pardington, in his report as secretary of the meeting: "It will be constructed on a private right of way, will have no grade crossings and will be of sufficient width to insure absolute safety under all conditions. It will

LONG ISLAND IS SELECTED AS THE LOCATION—COMPANY WITH \$2,000,000

be protected by suitable fences and will provide high-class accommodations for motorists. As a toll road it will have numerous feeders, controlled by toll gates allowing access at frequent intervals. Each toll gate will take the form of an English inn, where the motoring public will be privileged to refresh themselves under club conditions. Each inn will be provided with its garage, charging and supply station, oil-sprinkling equipment, road-repairing tools and material, and will be controlled by the company promoting the scheme. The route of the highway is purposely withheld for the present. It will be a highway in the broadest sense of the word, and although it will be especially constructed for the purpose, it will follow the natural grades and bends, incidental to all general public highways."

The estimated cost of the speedway is \$2,000,000. Of this approximately \$400,000 was reported at the meeting as having been already pledged. How good the chance of raising the balance is may be judged from the names of those in attendance at the meeting and of the following, who with W. K. Vanderbilt, Jr., as president, consented to act as incorporators of the company: Harry Payne Whitney, Clarence H. Mackey, E. Russell Thomas, W. J. Matheson and John Farson. A plan and scope committee was appointed with Mr. Vanderbilt as chairman and Ralph Peters, A. R. Pardington, Jefferson De Mont Thompson, Dean Alvord and Dave Hennen Morris as his associates. At a subsequent meeting of the committee Mr. Alvord, who has enormous real estate holdings on Long Island, was instructed to at once proceed to secure rights of way; Mr. Peters was authorized to have preliminary surveys made, and Mr. Morris was directed to prepare incorporation papers and outline the legislation needed.

Mr. Pardington reported that two manufacturers had already offered to subscribe \$5,000 each. One of them, Windsor T. White, pledged his company for a further subscription should it be desired.

"Since the report of the meeting became public," said Mr. Pardington today, "I have received several telegrams and letters from manufacturers favoring the speedway scheme and offering support. Among them was a wire this morning from Henry B. Joy, of the Packard Motor Car Co., pledging the support of his company. We confidently expect that the manufacturers will be good for at least \$250,000 in stock subscriptions and the New York dealers and importers, who will be most benefited, for a considerable amount more. We estimate that the speedway being at the very gates of the city, an average of

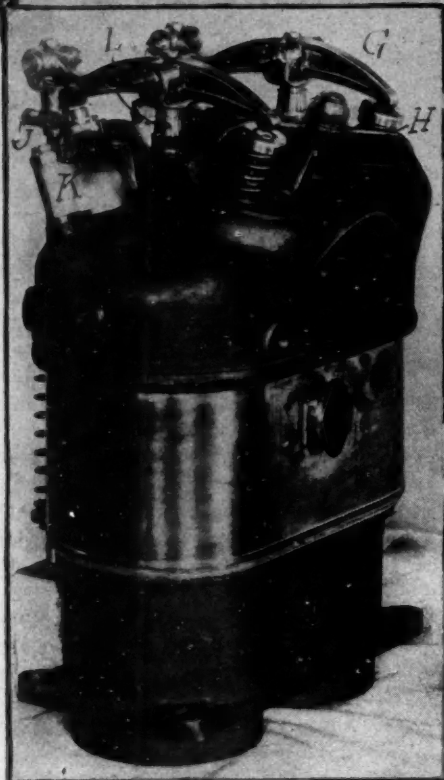
1,000 cars will daily pay toll over it. The use of the speedway for the Vanderbilt cup race or in fact for any speed contest at all is really after all secondary to its great value as a touring ground, where motorists may drive without danger or speed restriction and manufacturers may try out their cars over a measured course presenting average road conditions."

As soon as the special committee was appointed by the A. A. A. directors Windsor T. White, who has always favored an inclosed course, wrote offering a subscription by his company. In his letter Mr. White said in part: "As the establishment of a course will so greatly benefit manufacturers, it seems proper that they should give the project their financial support. Acting in accordance with this idea, the White Sewing Machine Co. will subscribe \$5,000 to the stock of the company formed to build the course, and I wish that you would put this formal offer before the committee. This subscription is payable whenever, in your judgment, plans have reached a sufficiently definite stage to warrant the calling in of subscriptions. I would say further that we do not wish to have it understood that we are not prepared to contribute further to this worthy cause, and I believe, with the project in such competent hands, no difficulty will be experienced in securing a large aggregate subscription from manufacturers. As regards the nature of the course itself, I personally believe that it should not be too perfect in character; that is, there should be sufficient grades, sharp turns, etc., so as to approximate actual road conditions. In no other way will it be possible for us to train a set of American drivers who will cross the water and bring back from Europe all the great international trophies—which is the goal that the American industry should set for itself."

BUFFALO'S OFFER

Buffalo, Oct. 22—Will the 1907 Vanderbilt cup race be held in Buffalo? This is a question being discussed by hundreds of motoring enthusiasts in this city. The latest development in the matter is the fact that the Automobile Club of Buffalo has invited the Vanderbilt cup commission to hold the next race here. President H. A. Heldrum and Secretary Dai H. Lewis, of the Buffalo Automobile Club, have selected a probable course for the race. The route commences at the four corners of the Transit road and Main street, Buffalo. The course covers a fine tract of country and has a total length of 28.3 miles. The road is an ideal one and meets practically all the requirements for which the cup commission asks. The Buffalo chamber of commerce and leading citizens approve the action of the club.

MOTOR CAR DEVELOPMENT



ONE ROCKER ARM OPENS TWO VALVES



this high-grade product into every channel piece of the mainframe, using it in the front and rear axles, using it in every part of the gearset, back axle drive and transmitting parts, and further, in the steering pivots and connecting rods, strikes a high-water mark. The steel used comes from the Bethlehem plant, it having begun the rapid production of this metal some months ago for the motor car trade.

A close follower to chrome nickel steel in the car is imported Hess-Bright ball bearings, these being used no fewer than twenty-six places in the car, which number is supplemented by annular ball races used in nine places for taking end thrust. Hess-Brights carry the crankshaft, both shafts in the gearset, the front road wheels, the steering pivots, the differential shafts and driveshafts in back axle, the fanshaft, serve in the steering gear and take end thrust in many places. Plain bearings suffice for the camshaft, the reverse pinion shaft of the gearset, the pump shaft and the magneto shaft, to which list can be added both ends of the connecting rods. Following closely on these two leaders and placed as a feature of the car De Luxe



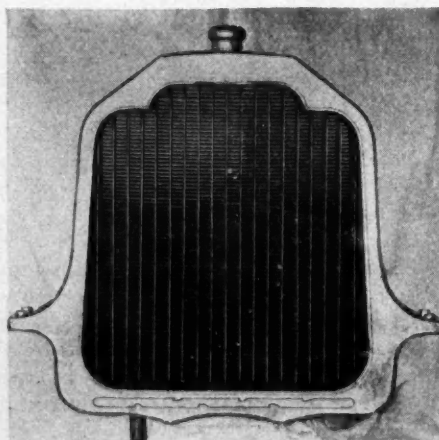
CYLINDERS ARE COPPER JACKETED



CAR DE LUXE, the latest entrant into the high-priced motor car field, is a 45-horsepower machine coming from the factory of the De Luxe Motor Car Co., Detroit, Mich., which company also has large factory facilities at Toledo, O. It was in the early summer months of the present year that the phrase "car De Luxe" first was whispered through the motoring realm. Since then much speculation has been rife chiefly owing to the unlimited capital that was placed at the disposal of the promoters, and further, owing to the securing of an up-to-date Detroit motor car manufacturing plant in addition to its home Toledo plant. Both plants are manufacturing this new Richmond of the car sphere, the Detroit place, where the offices are located, employing over 300 men already with additions being made every week and over 100 working at the Toledo factory. The car De Luxe, while not coming in the exact sense of a prodigy, makes its debut clothed in such much-discussed garments as chrome nickel steel, Hess-Bright ball bearings, multiple-tip carbureter, combination stationary and live rear axle and Mercedes type of transmission with direct drive on the third speed. Of this attractive list perhaps the general use of chrome nickel steel is paramount. Using this metal for crankshafts, and for gears in the transmission, has not startled the fastidious of late, but the introduction of

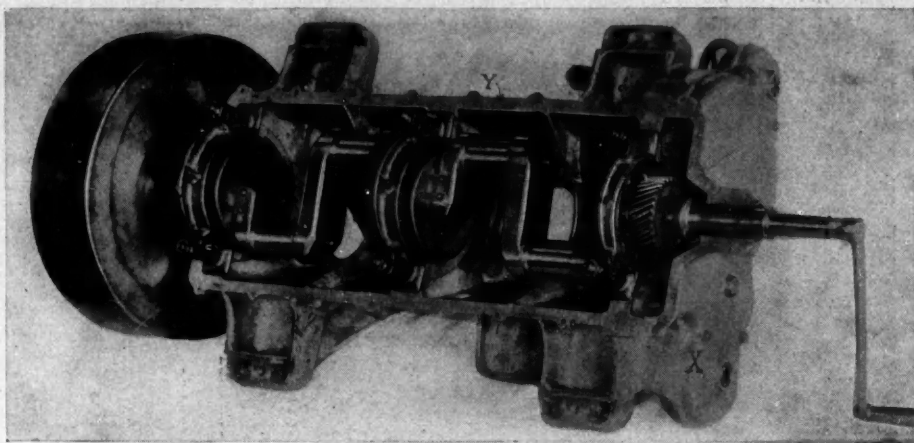
is a combination back axle in which a drop forged stationary part reaching from road wheel to road wheel takes the car load and is downward arched in the center, in which bed is carried the differential with its driveshafts connecting with the driving wheels.

To set at ease those wondering as to the general layout of the car De Luxe, it will suffice here to mention that it is a four-cylinder car, of the four-cycle type, driving through cone clutch, selective transmission and final shaft to back axle; that its wheelbase measures 121 inches, its weight approaches 2,950 pounds, its body is for seven passenger service, a magneto furnishes the igniting current and the car is intended to rank with the best American products of the day. The motor, with its cylinders cast in pairs, each cylinder with a 5-inch bore and 5¼-inch stroke, uses copper waterjackets, one jacket enclosing each cylinder pair. An analysis of one of these cylinder castings at the right top of this page reveals the general outline of it. In the right top the two openings B, at an angle of 20 degrees to the vertical, are for the exhaust valve cages, while two similar openings A, on the opposite side, do like duty for the mechanical intake valves, the exhausts being carried somewhat higher up to provide for extra waterjacketing around them. D marks the entrance opening for the cooling water to the jacket, E the water exit



CAR DE LUXE TUBULAR RADIATOR

opening and F the receptacle for threading in the rocker arm pillar for supporting the valve rocker arm. Cylinder castings are finished by two boring processes, first a rough one, in which a heavy cutting is removed, then a smoother one, which is followed by a final grinding process. Superiority is claimed for the cylinder casting, of domestic manufacture, because of their being made from dry sand castings which afford a finer casting surface. The left cylinder illustration is intended to convey the general principles of the valve action which has as its leading merit the use of one camshaft for opening intake and exhaust valves, and but four cams, four pushrods and four rocker arms, each arm opening the intake and exhaust valve for a cylinder. This rocker arm, G, a chrome nickel steel forging, is supported at its center on an adjustable rocker arm pillar with a yoked top on which the rocker arm is fulcrumed on a hardened pin. One end of the arm, the nearer one, rests on the top of the exhaust valve stem and the opposite end is double, a portion of it resting on the top of the intake valve stem and a hooked part having an eyehole for uniting pivotally with the top of the lift rod. When the cam raises the lifter rod the near end of rocker arm G, being lowered presses on the exhaust valve stem opening the valve, at which time the further end of the rocker arm rises off the intake valve stem. As the cam H revolves, a deep recess in it, marked F, illustrated on next page, allows the lifter rod to fall lower than ordinarily, it being pulled down by the heavy coil spring surrounding it and seen on the left side of the motor. This pulling-down action presses the further end of the rocker arm on the intake valve stem opening the valve. Thus the exhaust valves are opened by the deep part G of the cam raising the lifter rod and the intake valve by its spring pulling down on it. For timing the valves two provisions are furnished. The locknut L on the rocker arm pillar can

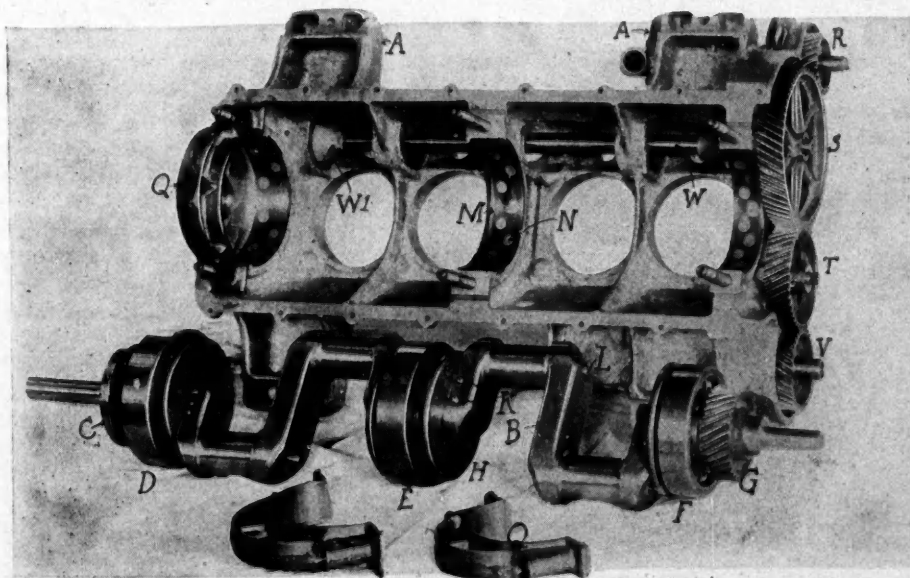


THE BALL-BEARING CHROME NICKEL STEEL CRANKSHAFT IN POSITION

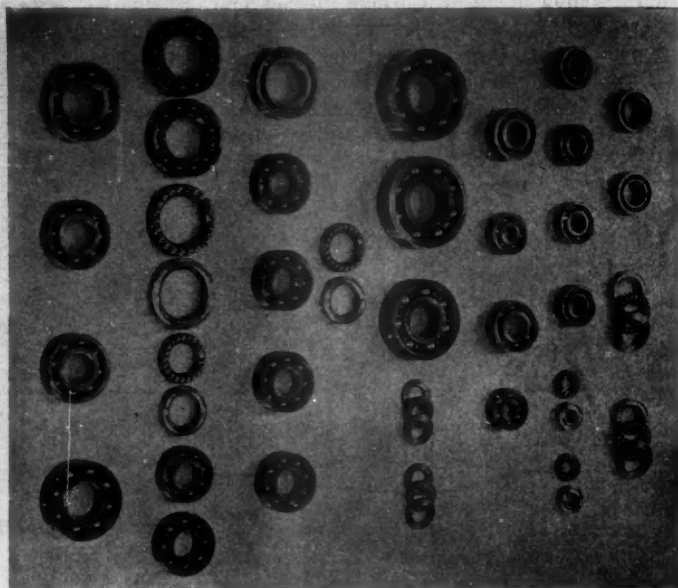
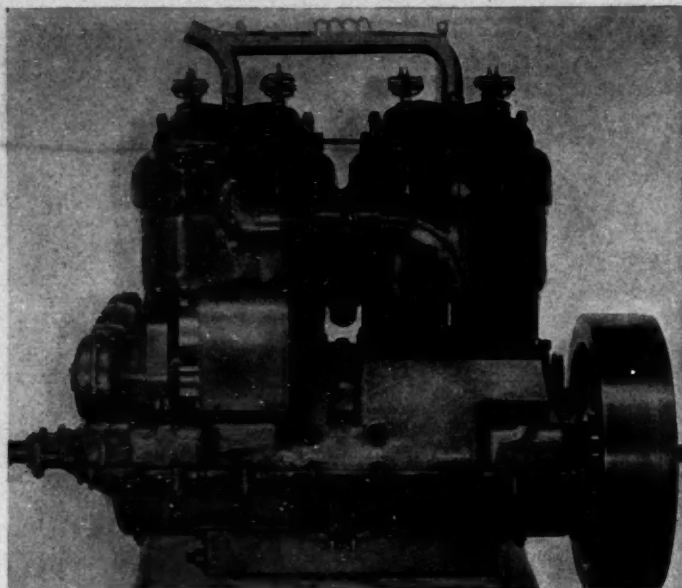
be loosened and the support raised, and should this not give accurate timing for intake and exhaust then the setscrew J on the top of the lift rod can be loosed and the rod lengthened or shortened by the threaded top yoke, to which the end of the rocker arm is pivoted. Easy removal of the exhaust valves is provided by the X-shaped steel forging H held in place by a single nut and stud, two arms of the X retaining each valve cage. The valve cages are a ground fit and at their lower end rest upon a copper gasket, it in turn resting on a shoulder in the cylinder opening. Intake valves, $2\frac{1}{2}$ inches in diameter the same, as the exhausts, are contained in similar cages made a ground fit in the cylinder opening and held therein by a manganese bronze casting K, one casting serving for both intakes in a cylinder pair. Three bolts hold the casting in place and to prevent sucking of air in the opening where the top of the intake valve stem passes through the casting a bronze sleeve with packing is resorted to.

From the initial announcement of the use of Hess-Bright ball bearings for carrying the motor crankshaft by the Hotchkiss company the opponents of ball bearings opened a campaign on machines entrusting

the carrying of this omni-important shaft to ball races. For a year the warfare developed into the fiercest vituperation, which, however, suddenly subsided one year ago when Mercedes exhibited its ball bearing motor for its touring machines. Following this announcement came the surprise of a six-cylinder American machine using these bearings, and finally, at the present time, at least four of the big American builders have staked their reputation on three ball races for the crankshaft. The motoring public have now forgotten the sarcasm that a couple of years ago they heaped on ball bearings, and now are lauding those firms using them. In examining the illustration of the top half of the crankcase of the car De Luxe motor, which casting is inverted to facilitate examination, it must be borne in mind that the bearings are supported from the top half of the motor crankcase, which reposes on the subframe pieces, just as do the plain bearing shafts at present. The shaft B is a chrome nickel steel forging with a diameter of $2\frac{1}{4}$ inches and carried on three imported Hess-Bright ball races, D at the rear end of the case, E in the middle between the pairs of cylinders, and F at the forward end. Each ball race carries eight 1-inch balls, the inner ball races having a diameter of $3\frac{3}{8}$ inches and the outer races of 8 inches. The width of the races is $1\frac{9}{16}$ inch. In supporting each race in the case provision is made to strengthen that part of the case above the bearing by having cast into it semi-circular steel plates M, $5/16$ -inch thick, anchored into the casting by the aluminum anchors N, where the metal in casting flows through the holes made with a cone-like top. Against these plates rest the ball races D, E and F, and to retain them therein high carbon steel bearing caps Q are needed, each cap being held by a couple of bolts with nuts and cotterpins. The semi-circular plates M play the additional role of facilitating the accurate boring of the top of this plate and the inside of the bearing cap Q. When doing this work with the cap in place, as at the left end of the case, the boring machine cuts the metal of cap Q and plate M at an even



INVERTED TOP HALF OF CRANKCASE DISCLOSING BEARINGS AND SHAFT



MAGNETO CARRIED ACCESSIBLY ON LEFT SIDE—THIRTY-FOUR BALL BEARINGS IN THE CAR

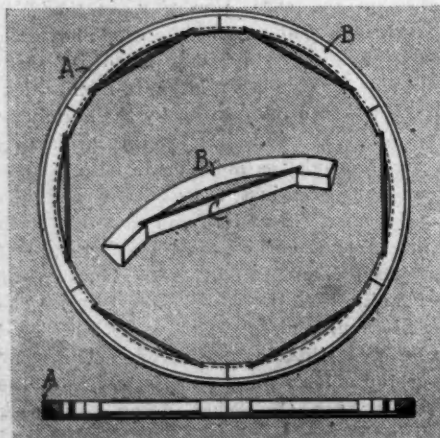
rate, both being of the same hardness; whereas were the plate M not in position the borer would cut extra deep into the aluminum and proportionally shallow into the inner side of the cap Q, the result being the practical impossibility of getting the three bearings in line. The crankpins, that part to which the lower ends of the connecting rods attach, are made 2 1/16 inches in diameter and 3 inches long, and the shaft itself, a Bethlehem product, has a tensile strength of 140,000 pounds to the square inch, an elastic limit of 130,000 pounds, and to insure that this standard is adhered to the Bethlehem plant guarantees each shaft to exceed the minimum of 125,000 pounds elastic limit. For those who are wondering how the middle ball races are slipped over the angles of the crankshaft into its position, let it be said that the inner race in each bearing is 3 3/4 inches internal diameter and the crankshaft 2 3/4 inches, and occupying the space between this race and the shaft is a split steel bushing ground on both sides. On each side of the bushing is a divided bronze clamp holding the race and bushing in their proper position on the shaft.

In designing the series of four gears in the front of the crankcase, the rule is to run-steel against bronze. The small pinion G on the end of the crankshaft meshes with the large bronze half-time gear S on the camshaft W, and from this gear is driven the steel pumpgear R and the steel idler T. Through this idler is driven the bronze magneto gear V. Both pump and magneto gears are driven from the camshaft gear S in order to overcome the irregular strain on this gear in lifting the valves, giving a jerky motion. Spiral gears, made with 1 1/4-inch face, afford long teeth for meshing, the result being less wear. The crankshaft gear G is keyed and locknitted on the shaft, so is the half-time gear S, and it has a ball thrust behind it to counteract any back thrust occasioned by the spiral teeth. The same illustration shows the manner of oiling the lower connecting rod bearings. The crankpins are bored, the end of the bore showing at L. Close to the bearing is a brass oil ring H which is filled from the crankcase splash, and from it a tube fitting into the left end of the bore L delivers the oil to the throw, from which

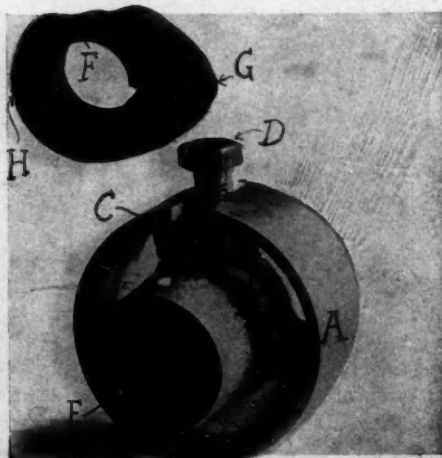
it passes out by centrifugal force into the bearing. A couple of screws K secure the oil ring to the crankthrow arm.

Each piston carries four Westinghouse compression rings, the feature of these rings being the making of each from thirteen parts; a split ring A made with triangular cross section; six segmental parts B, also of triangular cross section; and six springs C, 1 3/4 inches long and resting within the segments, being anchored in notches at each end. The six segments rest within the main ring, the springs C constantly pressing them outward. In putting a ring in its groove, the springs are first inserted in the segments, then the segments placed in the cylinder groove, and, lastly the outer ring A sprung into place. This makes a spring of the non-eccentric type, giving an even pressure against the cylinder wall at all parts of the ring circumference.

Provision is made for carrying the 1 1/4-inch camshaft on four bronze bearings, which bearings, of extra large diameter, permit of pulling the shaft out through the end opening of the case. Of these four bearings the central one illustrated exhibits the scheme of locking the bearing into the case. The bearing, resembling a small-diameter wheel, acts like the expanding shoe of an internal brake or clutch, the ring part A, split at B, is expanded by a wedge piece C placed within the split. The setscrew D in the wedge piece passes through the top of the bearing boss in the crankcase, and as it is tightened lifts, or pulls, upwards the wedge C, thus spreading the opposing ends of the rim A, the expansion locking the bearing in position. Another point about these camshaft bearings is that the bronze bushing E, made very long, of the non-split variety, has a central relief portion, extending one-third of its length, making the bushing, in reality, a couple of bearings, one at each end, with the central re-



COMPOUND PISTON RING

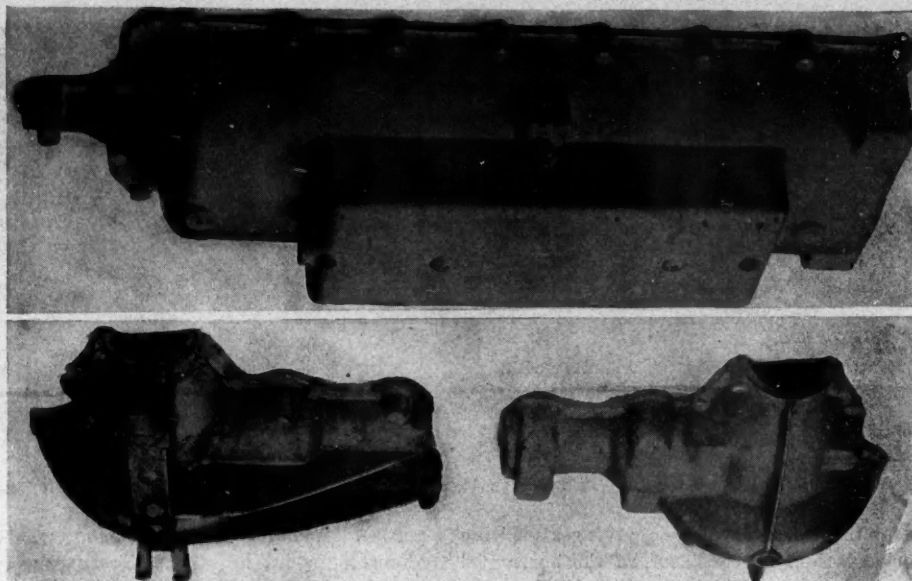


CAM AND CAMSHAFT BEARING

lief forming a chamber where oil can be stored.

In lubricating the motor two distinct systems have been called into service. The first of these, a six-feed Lunkenheimer oiler, delivers four feeds to the four cylinder walls, and one lead each to the magneto gear and the clutch. Oil so delivered to the cylinders drops into the crankcase, where it goes to augment the splash, but the splash receives its main supply direct from a hand plunger pump carried in the footboard. This pump, taking its supply from a 1½-gallon tank, shoots it direct into the front or rear half of the crankcase, a three-way cock determining which compartment it is forced to. On the bottom of the crankcase is attached a box-like casting forming an oil reservoir. In the base of the case proper are two standpipes with capped tops to prevent splash leaking out. When the oil in the case exceeds the level of the top of these pipes it overflows into the reservoir and can be drained off through a cock in the rear. Should the reservoir overflow there is furnished a small overflow pipe allowing the surplus oil to drip onto the ground. The boring of the crankpins and the use of oil rings secured to the crankthrows have already been referred to.

The igniting problem has been solved by the use of a Remy high-tension magneto with incorporated breaker and distributor. It is well located on a bed formed integrally with the motor base and placed close in rear of the front supporting arm on the exhaust side. In this location it is possible to remove it without the hands coming in close proximity with the hot exhaust manifold and carrying it well to the front of the motor requires a very short driveshaft. The plugs are carried horizontally in the cylinder side beneath the intake valves, and on top of the return water pipe is a support for the high-tension wires. Control of the spark and

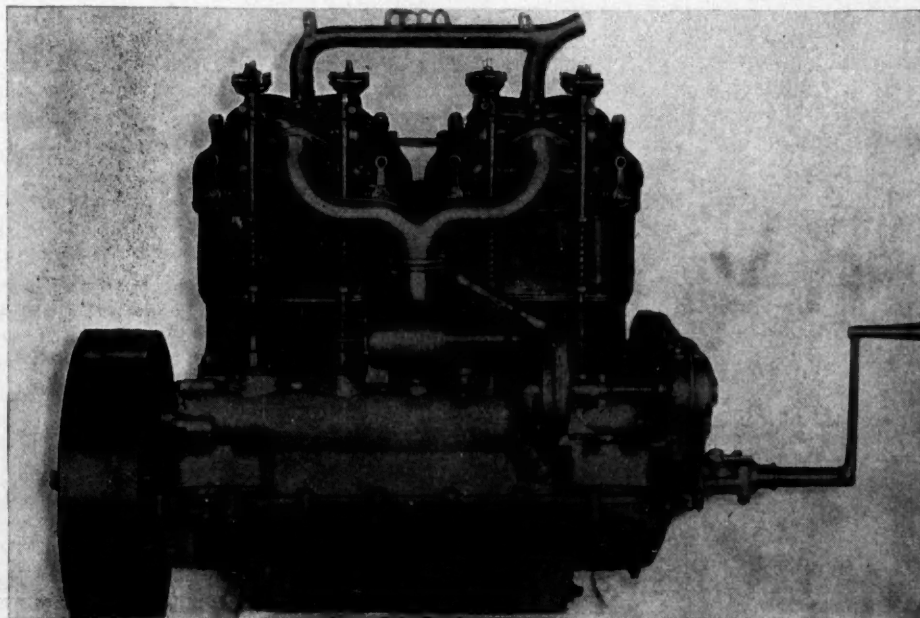


CRANKCASE BASE WITH OIL BOX AND DIFFERENTIAL HOUSINGS

throttle are on the stationary quadrant on the steering wheel, the steering column being of the concentric tube variety. In this connection it can be added that the car De Luxe carbureter has three spraying nozzles, a small nozzle for keeping the engine running when idle, a large nozzle for speeds as high as 20 miles per hour and a larger nozzle for all higher speeds. In starting, the smallest one is used, then the second brought into action, and finally the third, at which time all three work together. A governor is not resorted to. To facilitate starting of the motor an ingenious compression relief is used. In the cylinder heads just below the exhaust valves appears what looks like a priming cap rising from the side of the cylinder. The conical top of it is covered by a hinged cap with a limited hinged action. When the valve in the relief is opened on the suction stroke the cap closes, not allowing air to enter the cylinder, but on the

exhaust or compression stroke the force of the gases raise the cap, the gases gaining access to the outer air. The cap is, in short, a check valve opened and closed by motor exhaust and suction.

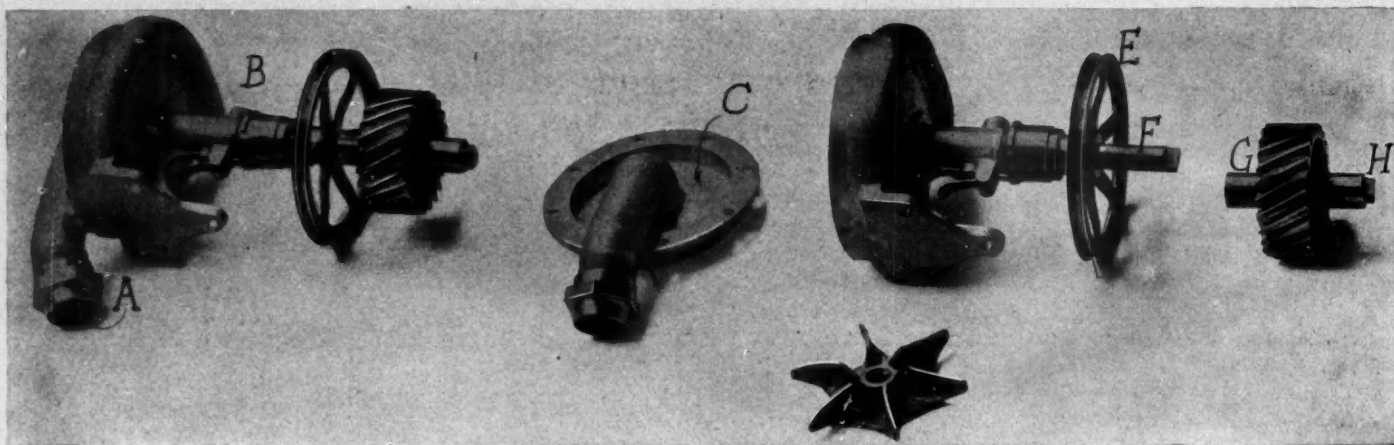
The pump assembly possesses nothing more unique than the fastening of the pinion G to the pumpshaft F. The latter is made with a clutch ending, over which slips the pinion hub G. The bore in the hub G for receiving the shaft F is not round but designed to clutch with the end of shaft F, and to lock the gear in place an end screw H suffices, a washer with dental teeth separating the screw head from the gear G. The pump, locking with hub, uses a bronze runner wheel, in an aluminum casing, the water entering at the axis through pipe A and exiting through a peripheral passage B. By depressing the end part C of the casing, bringing it close against the fan side of the runner wheel, little bypass



FOUR LIFT RODS FOR EIGHT VALVES IN CAR DE LUXE MOTOR



CUTAWAY CAP IN CONNECTING RODS FACILITATES LUBRICATION



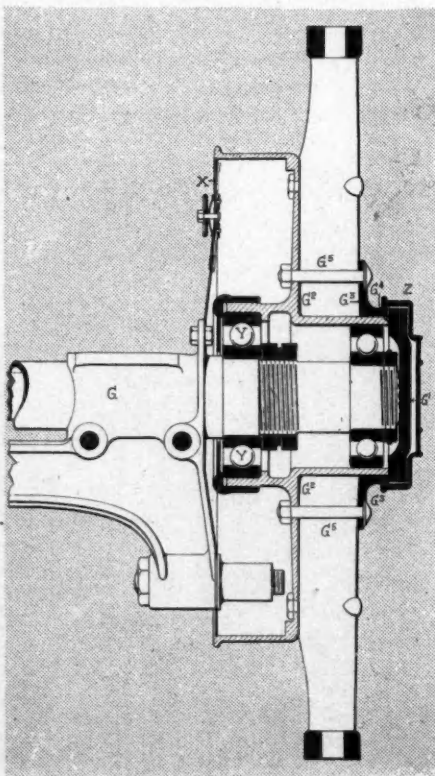
THE WATER PUMP GEAR IS CLUTCHED TO ITS SHAFT AND THEN LOCKED THEREON

for the water is allowed, giving a positive circulation. The radiator, of the horizontal tube type with a surrounding water tank, has seventy-eight of these tubes, each with a depth from front to rear of $3\frac{1}{2}$ inches and with a vertical water depth of $1/16$ -inch. Water returning from the cylinders into the radiator head passes from the left to the right of the radiator through a bank of twenty tubes, and then returns to the left through a succeeding bank of seventeen, followed by a return to the right through fifteen tubes, and a left through fourteen tubes, with a final crossing through twelve tubes to the right. More tubes are given where the water is warm, and as it reaches the bottom, becoming cooler, fewer pipes are needed in each set. On the radiator base appears a cross section of one of these tubes, with three slight indentations in the top surface, and alternating with these three others in the bottom, both series being used to avoid bursting of the pipes with freezing water, the indentations decreasing with the water expansion, and also allowing a bulging of the top and bottom sides of the water pipe. Within the cylinder jackets is a $\frac{1}{2}$ -inch water space and in the copper jackets are circular corrugations, used with the hope of preventing splitting of the jacket or otherwise bursting in case of low temperatures. In securing the jackets in place any electrolytic process is excluded, there being a horizontal groove around the cylinder where the top of the jacket comes and another for the bottom. The jackets, top and bottom, respectively, fit into these grooves and are held in place by filling the groove with a metal. Accepted water circulation rules in the system, it being from the radiator base to the jackets, immediately below the exhaust valves, the hottest part, and from the top center of the jacket to the top of the radiator. To further facilitate cooling an air fan is carried in rear of the radiator supported on a bracket from the front cylinder head.

Not in the motor, but in the gearcase as well, is the careful selection of material, nice proportioning of strength to weight, and good finishing of parts ap-

parent. The gearset, fashioned largely along Mercedes lines, partakes of the selective nature, affording four speeds for traveling forward and one for reversing, the third speed ahead being on direct drive, whereas on fourth speed the mainshaft of the gearset revolves faster than the crankshaft of the motor. Having followed so far the bearing scheme used in this car, it is not surprising to find, in all, five Hess-Bright ball races, two for supporting the front end of the mainshaft and one each for the end bearings of the countershaft and one for the rear of the mainshaft. The reverse shaft in the base of the case revolves on plain bearings. The transmission housing, an aluminum casing split into upper and lower halves, has the lower half suspended beneath the subframe pieces of the car through the medium of four studs on either side, four other studs A securing the top half in

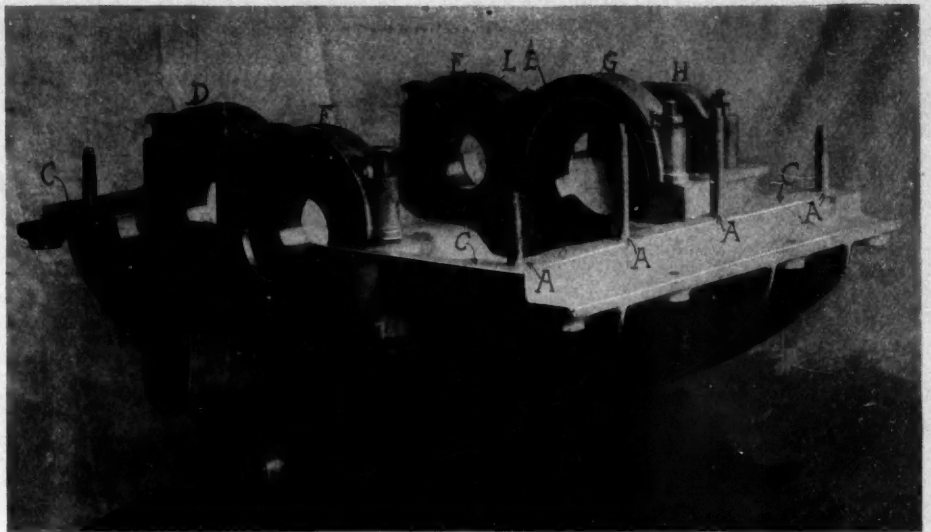
position. Unlike most gearsets the shafts are secured to the bottom half so that with the top half removed it is possible to run the gears, change speeds and, in fact, perform any task, such as running of the car. To this can be added the further fact that the upper half of the transmission housing on the back axle, being similarly removable, it is convenient after taking out all of the flooring boards of the car body to take the tops off the crankcase and differential and then operate the car, as before, the only inconvenience being the loss of oil and accumulation of dirt. The lower half of the case is stoutly ribbed crosswise, three of these webs appearing. In order to make the top half an oil-tight fit on the lower part the meeting surfaces of the two parts C are hand-scraped, in addition to the regular milling done on it. The bearing races as well as those F, G and H supporting the mainshaft, carry $\frac{5}{8}$ -inch balls, but the bearing races differ from those in the motor in that they do not rest on steel semi-circles embedded in the aluminum of the case, but have aluminum semi-circles L embedded in the under side of the carbon steel bearing caps, so that in boring the bearing the boring machine is constantly working in aluminum, assuring the possibility of all bearings on the main or countershaft being in register with one another. Chrome nickel steel tells the story of the shafts and gears of the case, this product forming the $2\frac{1}{4}$ -inch mainshaft, the countershaft, of the same diameter, the $1\frac{1}{2}$ -inch reverse pinion shaft and all of the gears. In changing speed three shifting sets on the mainshaft suffice, the reverse gear being stationary and only brought into action when the slow speed pinion is introduced into the idler gear. Mainshaft gears are held in position by a pair of oppositely placed keys formed integrally with the shaft, but countershaft gears depend on Woodruff keys. Shafts are ground all over, the insides of the gears are ground, and, in addition to the Woodruff keys, the countershaft gears are made a driving fit. For fourth speed gears of six pitch and with $1\frac{1}{4}$ -inch face



REAR WHEEL CONSTRUCTION

do duty, and for the other speeds ending with low the gradation of strength is made by having gears up to 1½-inch face, but with the same pitch. The gears are accredited with a strength of 240,000 pounds to the square inch, are all cut and finished in the factory and made on cutting machines, with a separate machine for each gear. To prevent possible grit getting in the gearbox oil bath and thence to the bearings the entire inner surface of the case is hand scrapped.

Nothing in connection with the car De Luxe exhibits greater genius than the back axle. It is a floating, live axle and at the same time a solid one-piece stationary product. Supporting the entire car weight in the rear is the chrome nickel steel, weldless drop forged axle A; not unlike many of the present-day front axles, with its dropped center, giving a clearance of 9 inches. At each end is a downward arm B for supporting the brake carrier, and on top is an integral spring seating M, while the axle is continued out through the wheel hub terminating at C. So much for the stationary part of the axle. Carried on this is the drive axle, the central spur gear differential H, with its large driving bevel resting in a steel casing D, forming the lower half of the differential case and carried on the stationary axle at points E, where supporting feet on the differential base straddle the axle A and are held thereto by bolts. Chrome nickel steel driveshafts G, 1½ inches in diameter, are made with a square fit into the differential gears and extend out through the bored out ends of the stationary axle A, driving the wheels from integral cap flanges on the outer ends. Covering the driveshafts are compression sleeves F, which, at their outer ends, abut against a shoulder in the stationary axle A and at their inner ends are threaded into a



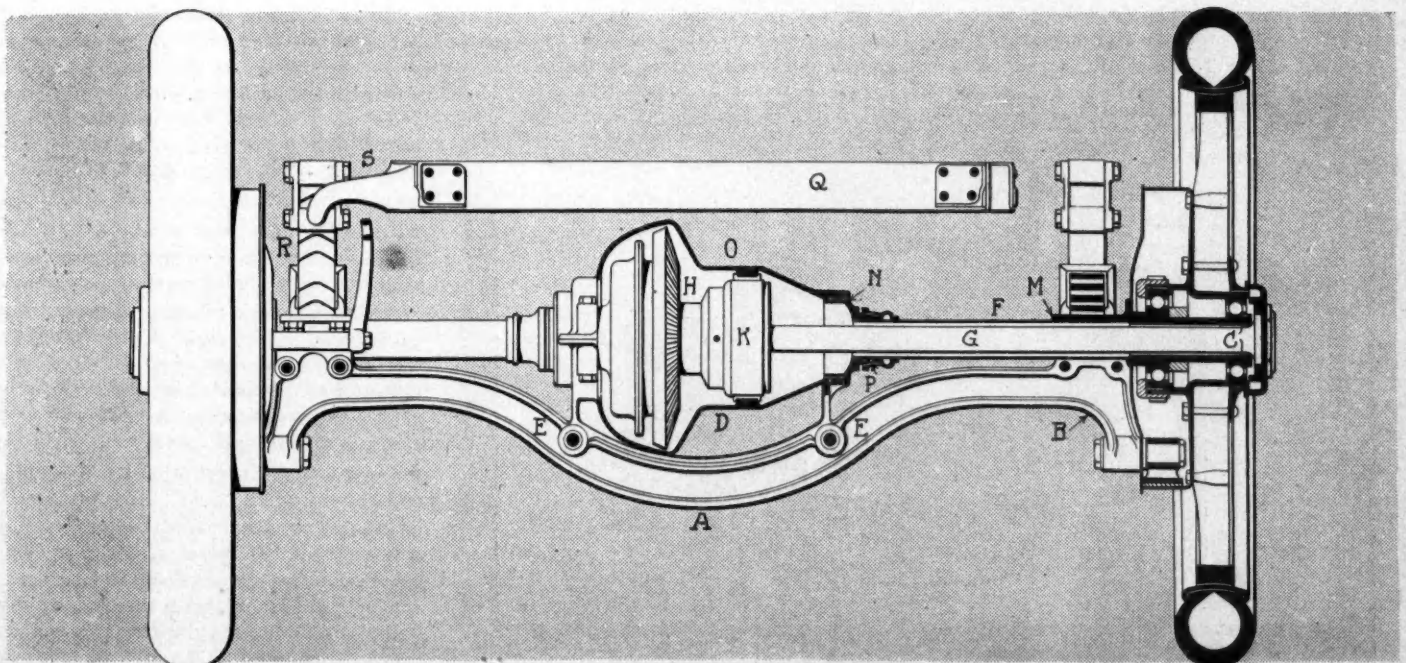
GEAR CASE HAS FIVE HESS-BRIGHT BEARINGS CARRIED IN THE LOWER HALF

thimble N having connection with the top and bottom halves O and D of the differential casing. In turn, threaded onto this thimble, is a tapered nut P which, when drawn up, forces the tube F tightly against its shoulder and rigidly ties the stationary axle and the differential housing together.

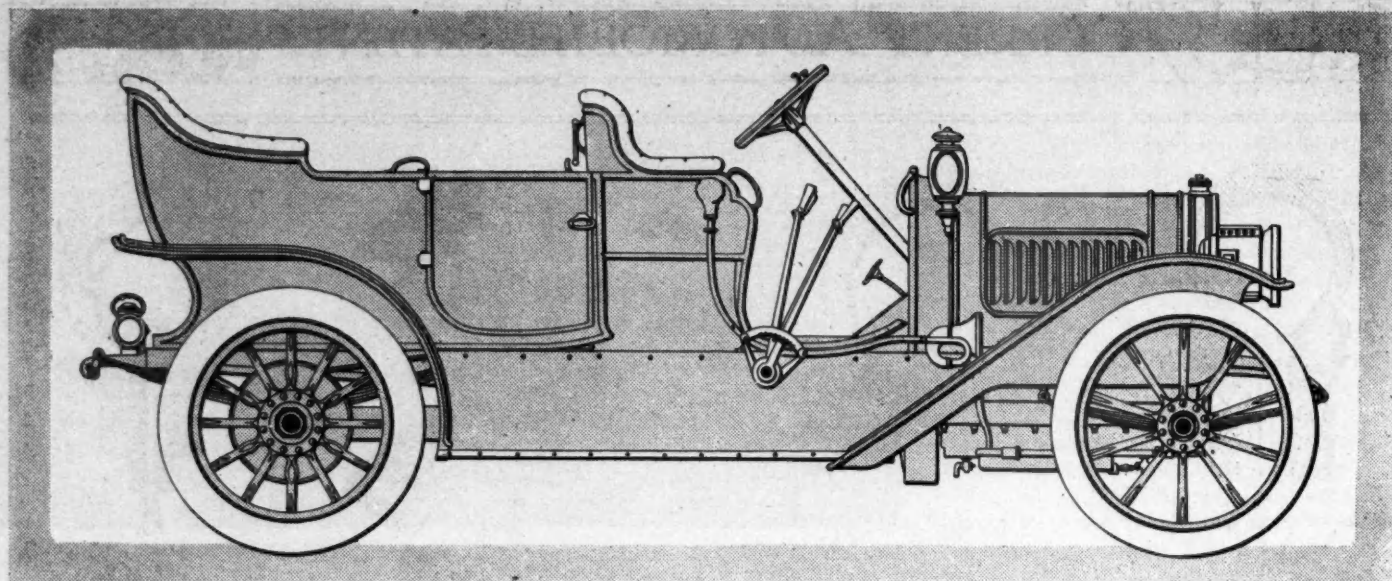
Following this axle construction is the driving of the road wheels, as shown in the line drawing of a rear wheel, where G marks the driveshaft sleeve, the shaft ending in a large 5¾-inch integral flange G1, which carries near its periphery teeth at G4 that lock with teeth in the flanges G2 and G3, forming the hub of the drive wheel, it being noted in this connection that the former flange G2 is a part of the cast steel brake drum, and continues through the hub of the wheel to where it meets and rests close to the outer flange G3. In this way the strain of driving the wheel is taken off the wheel

bolts G5 holding these flanges together and borne directly on the flanges. The very short hubcap Z would pass as a chip from a German factory so closely does it hug the flange G1, giving a neat and compact construction. Notice is drawn to the position of the inner races of Hess-Bright balls Y carrying the wheel, their location being directly beneath the center of the brake drum, which, interpreted, means that all strain of braking is carried directly on this ball race without the presence of side strain, as occurs where the brake drum extends to the side of the bearing support. In order to facilitate the brake adjustment a cover plate X, nearly 6 inches in diameter, is removed by the finger wheel, and when out the hand can be inserted into the brake drum and the brake tightened or loosened by hand without recourse to a wrench.

Characterizing the frame construction is the use of chrome nickel steel, the car De



CAR DE LUXE REAR AXLE HAS A STATIONARY CHROME NICKEL STEEL PART, SUPPORTING A DRIVING SYSTEM

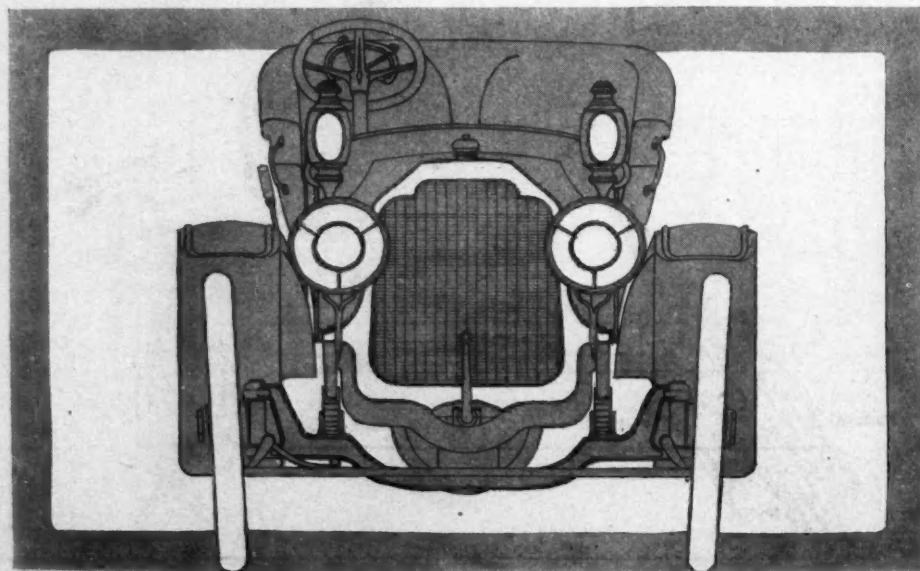
CAR DE LUXE WITH 36-INCH WHEELS AND $3\frac{1}{2}$ AND $4\frac{1}{2}$ -INCH TIRES

Luxe frames being, it is claimed, among the first made in America in which this metal is the sole constituent. The side pieces, straight from front to rear, are of inverted U-shape, the width from side to side of the U measuring $1\frac{1}{2}$ inches and the vertical depth $5\frac{1}{2}$ inches. To increase its strength the bottoms of the sides are beaded back 1 inch. Carrying the motor is a channel subframe supported on three heavily dropped cross pieces, these uniting with the side channels through drop-forged steel corner clips hot riveted in place. Gusset plates are used only at the rear of the back cross piece, where they lend rigidity to the frame extensions carrying the spring irons. For the forward axle a weldless chrome nickel steel drop forging made in I-section with integral end jaws forming the vertical hub part of the steering knuckles is used. Springs in front and rear, of the semi-elliptic type, are made long, those in front with length measurement of 38 inches, with a 2-inch width, seven leaves;

and those in rear measuring 52 inches, of the same width as the forward pair but carrying a couple of extra leaves. Eye-holes in the long leaves where the shackles attach are fitted with bronze bushings, shackle pins are hardened steel and an oiler is furnished for each shackle pin. To introduce an integral shock eliminator the second longest leaf in each spring is continued around the eyehole part of the long leaf, forming a hook, which gives the spring hold to lessen rebound by interfering with the upward bound of the long top leaf.

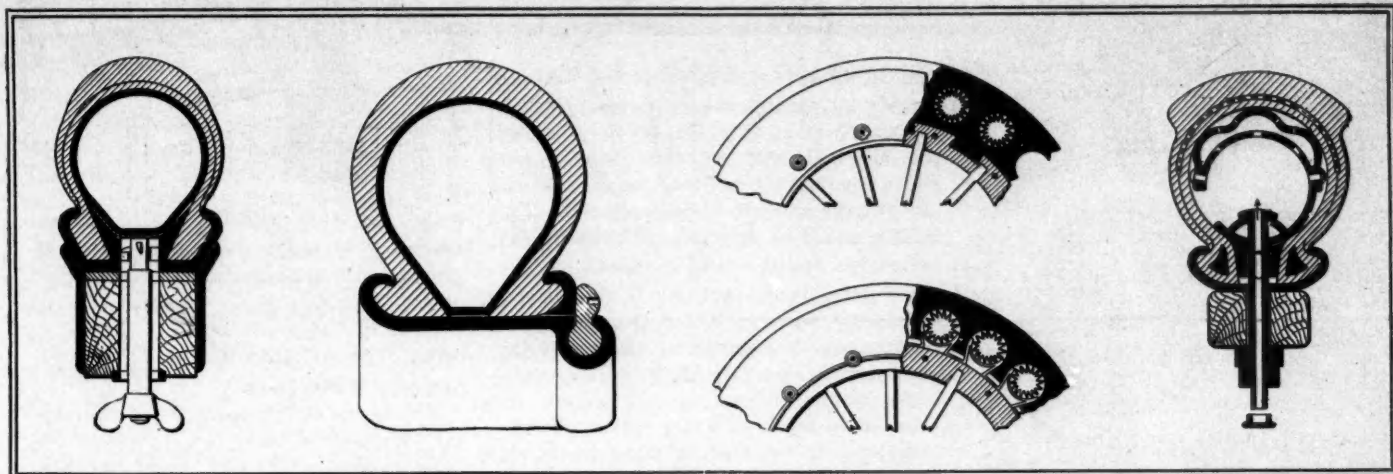
In designing the body the apparent aim has been eliminating heavy curves, also straight lines, as every surface is an easy curve, scarcely perceptible in places but yet present. The body is low. In achieving this stress has been centered on a specially low back to the front seat—a feature common on English cars—and as well as making the top of the back seat but slightly higher. In the tonneau is accommodation for three on the back seat,

60 inches wide, and in the space between the front of this seat and the back of the front seat, 40 inches, is placed a couple of 14 by 14-inch folding seats that are specialized by being so pivoted that the occupants can face in any direction and the seat locked in that position. When not in use these seats fold up against the tonneau sides. Beneath the back seat is the regulation tool box and carrier space, an interesting innovation being added, however, in an automatic opening device, so operating that when the cushion of the seat is lifted the door of the tool box opens. Beneath the front seat is a couple of leather storage boxes, not fitted permanently but removable, so that at the journey's end or at night stop the boxes can be lifted out as a suit case and taken into the hotel or other place, they being furnished with handles for this purpose. These boxes are removed by dropping either the door beneath the front seat or through the tonneau. Front fenders rise gradually from the side step to a point, presumably 11 o'clock, on the front wheel, from which point they conform to the curvature of the tire, and formed integrally with them is a flap extending inwardly toward the car frame where it unites forming a mud-proof fender. Rear fenders, like those in front, are formed slightly convex and a mud protector is used between the running board and the car frame. The dash is of the hollow metal type. In ironing the bodywork attention has been given so that tops of the cape variety, victoria or canopy can be fitted, a shifting rail giving this privilege. Standard colors are dark blue with black and cream running gear. To afford accessibility the mud apron extending from the front end of the motor to in rear of the gearcase is rapidly demountable, dropping out of position without the removing of bolts. Steering is by worm and segment gear, the radiator is hung in rear of the front axle.



CAR DE LUXE ENTERS THE MOTORING SPHERE

CURRENT AUTOMOBILE PATENTS



CAVE-BROWN-CAVE'S TIRE

GRIFFITH'S TIRE

LANCASTER'S TIRE

BROWN'S METALLIC TIRE

Bevel Steering Gear—No. 833,230, dated October 16; to H. Lemp, Lynn, Mass.—On the lower half of the pillar carrying the steering wheel is a bevel pinion which meshes with a large bevel gear, attached to which gear is a radius arm. From this radius arm are ball and socket connections with the steering knuckles. A hydraulic checking device controls the movement of the large bevel. This hydraulic steering check consists of a rocking part with pistons connected thereto, cylinders reciprocating in these pistons and a passageway connecting the cylinders with a valve controlling this passageway. The same inventor has a patent bearing, No. 833,232, in which the steering gear is a chain and sprocket scheme; a small sprocket on the steering column, a large sprocket with its horizontal axle cross-wise of the car and carrying a radius arm, and a chain passing over both sprockets. The upper and lower sprockets on the steering pillar are very small, whereas the large sprocket on the shaft carrying the radius arm is proportionately larger, giving a liberal turning action of the vehicle road wheels with part turn of steering wheel.

Spring Rims—No. 833,398, dated October 16; to F. J. Lancaster, New York city—On the wheel rim is a hard rubber tire and embedded in it is a series of radially compressible springs, each spring comprising an annular series of coils longitudinally flattened, and having rounded ends. Holding the tire in position on the rim are side plates, and these plates form abutments for the ends of the springs.

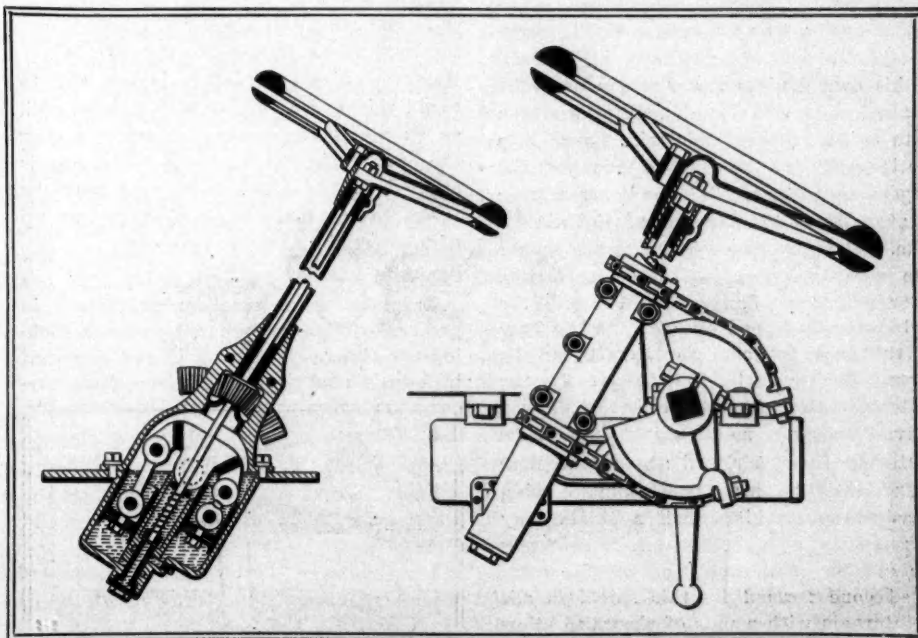
Wheel Tire—No. 833,437, dated October 16; to L. H. Broome, Jersey City, N. J.—This patent refers to a tire comprising a tubular element of stiff resilient material forming a flexible casing and a perforated tubular ring of spring metal, longitudinally disposed within the casing and contributing to form an externally-located air space communicating with the interior of the tubular ring, the latter being divided at

one side to present edge portions, one of which is capable of free movement with respect to the other, and provision for positively securing the inner portion of said ring in position.

Rim and Tire Attachment—No. 833,199, dated October 16; to C. P. Cave-Browne-Cave, Chesham, Eng.—This patent has specific reference to a tire attached to a detachable metallic wheel rim having beaded edges for holding the tire in position. In the rim is a security-bolt for detachable pneumatic-tire-carrying rims, composed of a shank passing radially through the rim and felly, and having at its extremity a lateral projection, with a detachable head situated between the edges of the tire cover and adapted to touch the circumference of the air tube, the bolt head having a cavity facing the air tube and a narrower central opening adapted to admit the extremity of the shank into the cavity, the base of the cavity having a

radial slot adapted to admit the lateral projection of the shank and a series of helically-inclined surfaces arranged round the central opening like a series of ratchet teeth, which surfaces serve to support the lateral projection of the shank and to impart to the shank a helical motion, when the shank is turned after the introduction of its extremity into the cavity of the bolt head.

Wheel Rim—No. 833,520, dated October 16; to D. D. Griffiths, Chicago, Ill.—The vehicle wheel, comprising a rim, has an annular seat extending around one edge thereof, and a locking-ring, separate from the tire, mounted in the seat and extending outwardly beyond the periphery of the rim for retaining a tire thereon, the seat and the adjacent portion of the ring being formed to slide circumferentially into interlocking engagement with each other for preventing the ring from springing out of the seat in a radial direction.



LEMP'S BEVEL GEAR AND CHAIN STEERING GEARS



SHOP KINKS



Irregular Spark Timing

A jump spark timer and distributor mounted on a cross-shaft and run by spiral gears from the camshaft is more affected by wear of the gears than if it were driven by spur gears, partly because the gears themselves wear somewhat faster and partly because a given amount of wear in spiral gears permits a greater angle of lost motion in the shaft. Under some conditions the effect will be to make the shaft run jerkily or overrun the shaft driving it. If this action is set up it is plainly visible. The remedy is to impose a slight end thrust on the shaft in the proper direction to keep the driving faces of the spiral gears in contact when the motor is running. Any sort of a spring will serve this purpose, and the pressure can usually be applied to the hard rubber casing of the timer, which, of course, does not revolve. If the timer has ball-bearings and these are lubricated with a little oil or grease, the wear will be negligible, but if the timer has plain bearings they will need to be watched somewhat. As the timershaft runs in oiled bearings, and as the gears themselves are oiled, it follows that the shaft is not so perfectly grounded as a clean metal-to-metal contact, and if the shaft oscillates when running so that the gears intermittently lose contact, the resistance to the return of the current may be considerable, resulting in weak as well as irregular sparks.

Protecting Carbureters

The owner who changes his old carburetor for a new one generally has to rely on his own devices for a screen over the intake. A simple way of making a screen is to roll a piece of fine wire gauze into the longest cone that can be managed, the largest diameter of the cone being a trifle greater than the diameter of the air intake. The wire gauze is cut to the proper size and its edges jointed by soldering, after which the flange supplied with the carburetor is slipped over it, and the base of the cone trimmed so that it can be spread flat next to the flange. If the bottom of the motor is not protected by a canvas or sheet metal shield it will be necessary to fit a shield around the wire gauze cone to prevent the mud being splashed against it. Such a shield may be rolled out of a sheet of tin, as shown in the sketch. The small end of the truncated cone formed by this shield is slit at intervals with a pair of shears to allow of forming a flange. The cone should be

sufficiently spread to give a free passage for air all around the gauze cone inside, as it is evident that the greater part of the air will tend to pass through the gauze cone should be loose, so that it can air passage around it is restricted. The intake should be directed backward, so as to receive as little mud as possible. The gauze cone should be loose, so that it can be readily withdrawn for cleaning when the flange B is unscrewed. The particular arrangement shown in the sketch is applicable mainly to carburetors which are warmed by an air or water jacket. If the carburetor is required to make warm air from the proximity of the cylinder or exhaust pipe, an especially formed mud shield must be used.

Cleaning Out a Jacket Core

Sometimes a cylinder casting will come from the factory with some part of the waterjacket core still in it, and this will produce overheating, which may be serious. The evidence of it, of course, is inability to keep the engine cool, even with abundant water circulation. To clean out sand the best thing is a diluted solution of hydrofluoric acid, about one part acid to ten of water, which should be poured into the jacket and let stand till the sand is loosened, so it can be washed out. Ordinary acid will not attack the sand, but hydrofluoric acid will. It is necessary to remember that hydrofluoric acid will also attack glass, so that it must be kept in the special container in which it is received from the chemist.

Increasing the Spring Play

In applying supplementary spiral springs to a car it should be remembered that the play of the axle is thereby increased. If it is the rear axle of a shaft-driven car, the axle casing may strike the floor of the tonneau unless the latter is cut out to avoid this and a convex metal piece, such as an aluminum casting, is screwed over the opening in the floor. If the spring is applied to the front axle, care must be taken to see that the axle on coming up will not strike the crankcase.

Graphite's Good Qualities

Graphite is an excellent ingredient in grease for almost any purpose except packing the timer. Its virtue is not only that it helps to lubricate while the grease re-

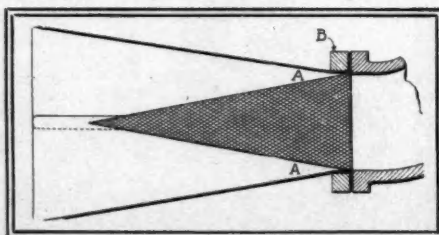
mains, but that it will cling to the surfaces for an appreciable time after the grease has become spent. If the graphite grease bought ready compounded is too stiff, as it may be, it is easily thinned by using a little lubricating oil.

Stopping Water Leaks

Among the things useful to effect temporary stoppage of leaks in the radiator may be mentioned white lead, bread and cornmeal. The white lead must be applied externally, after the manner of a poultice, on a bandage of rags, drawn tightly over the leak in any convenient manner. When it is not desirable to use a bandage of this sort a little bread can be kneaded into pellets and worked like putty into the crack, as much being forced in as possible. It will absorb water and swell, stopping the leak temporarily at least. Cornmeal is used by putting a little of it right into the radiator, where it is carried through the pump and the pipes, and in escaping from the leak gradually fills the crack.

Timing Magneto Ignition

All low-tension ignition systems, whether or not they derive their current from a magneto, have arrangements for separately adjusting the ignition time in the cylinders, and these adjustments will need occasional attention. Assuming that the adjustment of some particular cylinder is known to be correct, the crankshaft should be turned in the direction of its working rotation—never backward—until the piston in that cylinder is at the exact end of its compression stroke. Then the spark lever should be retarded carefully until the igniter is just about to break contact, and should be left in this position while the other cylinders are tested. The crankshaft is then turned, a half revolution at a time, and each piston in succession brought to the end of its compression stroke, and the necessary adjustment made to cause the igniter to be about to break contact with the piston in that position. The reason for not turning the crankshaft backward is that this will cause any lost motion in the gears and connections to show itself in the spark timing. The magneto should never be removed or its gears taken out of mesh without the gears first being examined to see if they are marked, so that they can be replaced exactly as before. If they are not so marked they should be before they are unmeshed. The correct angular engagement of the magneto armature with its driving gear is that at which the armature is practically verti-



PROTECTION FOR CARBURETOR

cal when the spark lever is advanced to its limit. By vertical is meant that the iron poles of the armature are bridging the gaps between the pole pieces of the field magnets. In other words, if the armature core is likened to the letter H, the H is lying on its side. The exact position of the armature core should be a little backward from the vertical position rather than a little forward, if the position of the gear teeth makes a choice necessary. The armature of a magneto should never be removed without a piece of soft iron being at once placed across the poles of the field magnets to prevent the latter from gradually losing their strength. This is very important.

One Way to Start a Fire

The droplights, or "extensions," used in garages for working under cars, naturally see hard service and their cables and sockets now and then need replacement. It is well to remember that it is the custom to earth the central conductor of the Edison circuit, and if a live wire connected with either the first or third wires of the circuit is grounded a short circuit will follow. It is frequently easy to feel a leakage of current when touching the lamp socket and the framework of the car at the same time, and it is no more than prudent in such a case to trace the

leakage at once. A spark caused by an accidental circuit in this manner might easily set fire to free gasoline, so that it is apparent that the mere use of electric lights instead of oil does not of itself insure safety.

Packing the Cylinderhead

Some of the older automobiles have cylinderheads separately cast, and these sometimes give trouble with the packing. The best packing to use is "vulcabeston," or asbestos with woven wire cloth incorporated in it. Generally, however, the trouble is at the bottom, due to the cylinder head and cylinder not fitting perfectly, so that at some point there is not pressure enough to hold the packing. A device which has successfully been used for this trouble is to form an endless ring of about No. 18 copper wire with the ends scarfed and soldered together, the ring being large enough to slip loosely over the boss usually formed on the cylinderhead and fitting into the cylinder. The vulcabeston gasket is put on over the wire ring, which cuts into the gasket and at the same time flattens it a little, so as to make a perfectly gas-tight joint while still permitting enough pressure to come on the outside of the gasket to make the latter water-tight. For cases which are not serious enough to necessitate resorting to this expedient, sili-

cate of soda will be found useful to make the gasket tight. If the head and cylinder are a good fit it is better to use powdered graphite to coat the gasket, as this prevents the latter from sticking to the metal and makes it possible to use it a second time after taking it off. In any case the studs should first be tightened as much as possible cold, and the engine run till warmed up, when the studs can probably be tightened a little more.

Trouble With Spark Plugs

Spark plugs with the usual tapering pipe thread are a source of much annoyance sometimes, owing to their failure to screw in to a uniform depth. Not only do the plugs themselves vary in diameter over the threads, but a cylinder in which the plugs have been screwed and unscrewed many times will wear a little loose in the threads. A plug which screws in only a short distance will not fire the charge with as much energy as one which goes clear in, owing to the distance that the flame must travel before reaching the main body of the charge. It is rather dangerous to attempt to correct this fault in a plug by running a die over it, as the result is apt to be simply to make the plug leaky around the threads; but sometimes nothing else can be done. Some kinds of plugs are not subject to this kind of trouble.

BRITISH TRADE SEEKS TO EFFECT NEEDED REFORMS

LONDON, Oct. 13.—For some time past the motor trade here has been debating the necessity to alter some of the commercial methods which have been grafted upon it. It was part of the scheme that where the pastime was in an embryotic stage trade had to rely for expansion if not countenance on the verbal and personal recommendations of users who had gained knowledge or experience of various motor cars. Out of this very natural form of development an extremely heavy tax was placed on the manufacturer and the retailer, too, for some of the English aristocrats are as keen on making dollars as any Wall street broker, and almost as clever. They make it the business of their lives to move about socially with and among people who are requiring or likely to require motor cars and by representing themselves as willing and able to put their friends on the best cash terms with manufacturers and dealers induce the latter to give them 10 per cent for their introductions. They really do nothing for this commission, as they simply make themselves right with the manufacturer and then send the customer touring around until some one of the firms secures the order. If the car is sold into any duly appointed agent's district he at once demands and obtains his additional commission, while the fact that the tout has probably allowed the customer 5 per cent of his own commission renders it difficult for the

agent if he wants to do business to do the same in any subsequent transaction. Another form of the evil is the acute motorist who worries the local motor trader for particulars, trial runs, demonstrations, etc., and knowing that the usual trade discount is 15 cents hawks around his order until he finds a new aspirant in the retail line or one who is willing to split his trade profit with the purchaser, who then goes and worries the manufacturer for the remainder of his days, knowing that he has no claim on the retailer. These and many other variations of the same trouble have induced the live men in the British trade to consider that the time has come to put matters on a straight basis.

The first resolute attempt to do this took the shape of a meeting of the manufacturers, dealers and retail agents under the auspices of the Society of Motor Manufacturers in London last Wednesday. At this two forms of agreement were submitted for discussion—one binding the manufacturer to sell only to agents registered, who had signed agreement No. 2, which bound the retailers to sell only at list prices and to purchase only from those firms who had signed agreement No. 1. It was a well-attended meeting, but very divided so far as the manufacturers were concerned. Some firms which do little or no trade through the agent were very rancorous; others, which do a large agency business, were very antagonistic, but all united in asserting the scheme to be impracticable.

It was, however, pointed out that the agents were practically unanimous in favor of the scheme and were ready to sign if the manufacturers indicated any proper or reasonable amount of support from their side. It was argued that the scheme was not nearly so impossible looking nor so difficult as that by which the Society of Motor Manufacturers had coerced the entire trade into supporting their Olympia show to the utter exclusion of all other London exhibitions. The body that had achieved that triumph could achieve another and less difficult one—the restriction of trade terms to the trade and the benefits of price maintenance. The discussion was long and pointed and in the end a resolution proposed by S. F. Edge was passed authorizing the society to draft an agreement for signature by manufacturers binding them under penalty not to sell pleasure cars under list prices to the public and to define what constitutes a motor agent or one who is entitled to obtain trade terms from the manufacturer.

It was also agreed by the entire meeting that an agents' and retailers' section of the society should be formed at special membership fees, and that this section should delegate members to meet the manufacturers' representatives to decide on the qualifications necessary to a bona fide motor trader. The next meeting to discuss the subject will probably be held during the Olympia show, when it is believed some form of an agreement will be made.



LEGAL LIGHTS AND SIDE LIGHTS



DISPUTE OVER AUTHORITY

Washington automobilists are up in arms against the authorities of Glen Echo, a little dot on the map of Maryland, for the outrages alleged to have been perpetrated against a large number of motorists who have been fined good and plenty on charges of excessive speeding. Glen Echo is located on the conduit road and its destinies are looked after by John W. Garrett, "the boy mayor." His chief factotum, Constable Collins, has made himself particularly obnoxious by displaying his revolver and threatening to shoot tires unless his victims accompanied him to the mayor's office without murmur. These wholesale arrests have again brought forth the question as to whether or not the authorities of the District of Columbia and those of Montgomery county, Maryland, have any authority over the movements of motor cars on the conduit road, a highway at present owned and maintained by the federal government. It is probable a test case will be brought to determine this question. The fact that the court of appeals of Virginia decided some time ago that the Virginia state authorities had no jurisdiction over the Arlington road leading out of Washington to the Arlington national cemetery, the same being a national highway, owned and controlled by the federal government, leads the Washington motorists to believe the court will decide the conduit road case, if it is brought, in their favor.

GARAGE RESTRICTIONS

An amendment to the police regulations of Washington, D. C., has been proposed to the effect that no permit for the erection of a garage in the residence sections of the city shall be issued unless the consent of the citizens in the neighborhood has been obtained. The provision in the building regulations regarding boilers and machine shops will be applied to garages located in alleys, and the consent of two-thirds of the residents and property owners within 90 feet of the proposed garage must be obtained before the permit will be issued by the authorities.

TAGS MUST BE LEGIBLE

Some Philadelphia hot dogs have been having fun with the police of the Montgomery county townships by carrying their front and rear tags parallel with the car, making it practically impossible to distinguish the number if the machine is "hittin' it up" a little bit. Others have been putting grease on their tags—the dust doing the rest. Chief of Police Chambers has decided to checkmate the law-breakers and has issued a ukase to the effect that any driver who allows his tags to remain in an illegible condition or fastened to the car in any position but across the front

and rear will be arrested and fined. Philadelphia is not alone in this evasion of the law, for in many other cities the same complaint is made. To the credit of the owners, however, let it be said that few of them are guilty of such acts. In ninety-nine cases out of a hundred it is a chauffeur, one of the grand stand sort, who fears to take chances of being caught in some of his mad dashes through the streets of the city. Others suffer through his cowardice and Philadelphia will try to stop him or get rid of him.

DEGREE OF CARE REQUIRED

In a case before the appellate division of the New York supreme court for the death of a child who was run over by a motor car it appeared that the child was 8 years of age, active and intelligent, and the trial court instructed that on the question of contributory negligence the jury should take into consideration the age of the child, his mental capacity, and whether he was capable of exercising any degree of care. The supreme court held that it was error to refuse to instruct that the jury might find that he was capable of taking some care of himself, and that if in the exercise of the care he was capable of he would have seen and avoided the motor car, but did not exercise that care, the plaintiff could not recover. Regarding the duty of a child to exercise care in using the street, the court says: "Where the age and intelligence of a child makes it proper for the parents to allow him to go unattended, he is then bound to exercise while in the street the care that would be expected of a child of his age and intelligence which relieves his parents from negligence for allowing him to be in the street unattended, and a failure to exercise such care is contributory negligence, which precludes a recovery; in other words, he must exercise the care and intelligence which prevent a parent from being guilty of negligence in allowing him to be unattended in the street. Of course, a child of that age cannot be expected to exercise the care of an adult, and is not chargeable with such a degree of care as an adult would be under the same circumstances." The court holds that the degree of care which such a child should be expected to exercise under the circumstances is a question for the jury, and under proper instructions they are to determine whether the parents were justified in allowing a child of the age and intelligence disclosed from the evidence to be upon the street, and if they find that the parents were not negligent, then to determine whether the child exercised that degree of care which should be expected from a child of his age and intelligence in the use of a street at the time of the accident.

NEW GERMAN LAWS

German police officials have issued the following regulations which will govern foreign motorists touring in the fatherland: The driver of every foreign motor car entering the country must be able to produce a document from his local authorities showing that the car is in accordance with the regulations of its place of domicile. At the frontier customs station the driver must obtain a certificate showing his right to attach to his car a plate with a distinguishing number on it. Six marks, or \$1.20, has to be paid for such certificate if it is obtained within business hours, otherwise \$2. When leaving the country the plate must be left with the customs officials. The plate must be attached at the back of the car and illuminated at night time. All foreign distinctive marks must be obliterated or covered up while touring in Germany. The testimonials prescribed for the driver should they have been obtained abroad, must be certified to by a German consul. The owners of foreign motor cars can obtain permission from the competent authorities to attach the German distinctive mark so that during a tour in Germany their vehicles are regarded as being German and treated as such. As far as the tax is concerned it may be well to note that a permit to tour in Germany costs \$3 for 5 days, and \$8 for a period extending to 30 days. Such days need not be successive days, but can be single days at any time during the year that the permit is taken out.

WARRANTY OF TIRES

In a New York case action was brought for breach of warranty in a sale of an automobile. A salesman of the vendor represented to the buyer that the tires of the machine were fine tires of a particular make and as good as new. The buyer knew that the motor car had been used in a hill-climbing contest, and had traveled about 250 miles. The court held that the representation did not show a warranty of the tires, and that the statement of the salesman was merely an expression of opinion as to their condition, and not a statement of a present existing fact, necessary to constitute a warranty.

SUIT OVER LICENSE PLATE

Edwin Fitler, III, of Philadelphia, is the defendant in a suit recently entered in the United States district court by C. L. Charley and the Daimler Mfg. Co. to enjoin the former from using his Mercedes car without the license plate of the Daimler company, which is the sole owner in this country of the Mercedes patents. This action, it is declared, is the first of a series of similar suits to be brought against quaker city owners of Mercedes cars to protect the exclusive selling rights of M. Charley.

THE READERS' CLEARING HOUSE

ADJUSTING BALL BEARINGS

Philadelphia, Pa.—Editor Motor Age—In your issue of October 4 we noted with some interest among Shop Kinks a paragraph referring to ball bearing adjustment. This refers entirely to ball bearings of the older cup and cone type. If the ball bearing is a Hess-Bright the way to adjust it is to leave it alone. The material for these bearings is so selected and the size of the bearing so proportioned to its load that the wear during the lifetime of a machine is inappreciable. As there is no magic in the initials stamped on each bearing sufficiently potent to compel a machine designer to employ a proper size it may occasionally happen that too small a bearing is used. The only real remedy is a larger bearing suited to the conditions. Before concluding that a bearing has been overloaded a careful examination for evidences of rust or acid should be made. Both will show results similar to those of overload, but readily distinguished by the expert. The remedy is prevention of the cause by suitably arranging the housing to prevent water or acid getting into the bearing. Not a few suppose that because a ball bearing has rolling instead of sliding friction it may do without oil. That is a mistake, so long as the metallist cannot furnish a steel that is absolutely inelastic. Until such time deterioration from true ball shape must occur under load and be accompanied by a slight sliding contact that demands lubrication. The same arrangement that will keep water out of a bearing will retain lubricant, so that a single charge will do for a whole season. If it does not last, that must be by reason of leakage and the mounting should be suitably altered. Wear in a Hess-Bright bearing can be due only to the presence of grit; this is an improper condition, the correction of which will prevent further wear. Here again the same alteration of the mounting that will exclude water and retain lubricant will exclude grit. A properly mounted bearing has a light drive fit on the shaft and for its outer diameter a slip fit in the housing; the inner race, or ring, of the bearing is bound endwise between shoulders and nuts or their equivalents. When endthrust is to be taken the outer race also is secured between shoulders in the housing. Endthrust in opposite directions should preferably be taken on opposite sides of the same bearing instead of in one direction by the bearing at one end, and in the opposite direction by another bearing at some distance. It is best not to employ endwise adjustments for the bearing at all, but sometimes these are used as substitutes for accurate machining of shoulders in gear cases and other mechanisms. Care must then be exercised that the bearings are not set up any tighter than to

just take up slack; it is best to make sure of this by loosening a little to leave a barely perceptible play. It must be remembered that plain and ball bearings differ materially. A plain bearing has so high a frictional co-efficient that the resistance to rotation will at once show before it is set up too hard. In a ball bearing, however, the friction is so small a portion of the load that it will become perceptible only under a very considerable overload. Finally, do not take a bearing apart; but, if curiosity as to its method of assembly must be satisfied, do not dismember more than one bearing at a time. Balls are not made near enough to size to be interchangeable within the requirements of a ball bearing; a large ball in a bearing will take all of the load instead of allowing that to be divided among several. The old parable of the father who illustrated the wisdom of working together to his sons by showing the ease with which a single lath could be broken as against the impossibility of breaking a bundle of the same laths, shows also the folly of placing all the load on a bearing on one ball, that will then have to carry it all because it is slightly larger than its fellows.—Hess-Bright Mfg. Co.

TOO RICH MIXTURE

Nipomo, Cal.—Editor Motor Age—A friend of mine has a two-cylinder Wayne car fitted with a Kingston carbureter. On starting the motor, with the throttle partially closed, it will run about 300 or 350 revolutions per minute. If the throttle is opened two or three notches the motor will slow down for a period of 4 or 5 seconds and then will pick up and apparently run all right. It is very annoying to have it slow down, so if you can help us out through the medium of the Readers' Clearing House we will be very thankful.—J. F. West.

There appears to be too rich a mixture, which chokes the motor temporarily. Cut down the supply of gasoline and the trouble ought to disappear. In addition there will be an increase in the power developed and a material saving of fuel.

SIX-CYLINDER CARS

Syracuse, N. Y.—Editor Motor Age—Such demonstrations as the trans-continental run recently made by a Franklin six-cylinder car most thoroughly convince the public that power, speed and endurance are assured in this line of car, for within the first few weeks of the 1907 selling season, out of the hundreds of cars specified, over 15 per cent have been six-cylinder cars. This is remarkable for so early in the season and seems to indicate that at least one-fourth of the Franklin output this season will be for this type of car.—H. H. Franklin Mfg. Co.

MOTOR DESIGN

Sharon, Mass.—Editor Motor Age—Please answer the following through the columns of the Readers' Clearing House: What style of gasoline engine will run better, a four-cylinder vertical or a two-cylinder opposed, each of the four-cycle type? Which would make the better motor for a car? It seems to me an opposed motor of two cylinders would make an ideal power plant, though it seems to be in the minority among users. Is there objection to a horizontal motor in a car? For a four-passenger car is it advisable to have a four-cylinder motor, with so many parts to look after, or can a good-riding car be obtained with a two-cylinder motor? Would a 3¾ by 4-inch four-cylinder motor be large enough for a four-passenger car? Can such a motor be cooled by air without trouble? Which is the better way to place the valves—with the stems vertical, the valves on the upper ends and the lift upward, or with the stems horizontal? How thick should the cylinder wall be on a motor with 3¾-inch diameter? What should be the diameter of the crankshaft, if made of nickel steel and with three bearings? What should be the weight and diameter of the flywheel for both a four-cylinder and a two-cylinder opposed motor of 3¾ by 4 inches?—O. W. C.

The inquirer is mistaken about the number of two-cylinder opposed motors in use; as a matter of fact there are undoubtedly more of this type in use than any other. There is no objection to its use whatever, but where high power is needed it is necessary to multiply the number of cylinders. Of course the four-cylinder motor runs a little smoother, with better torque, owing to the frequency of impulses; but the two-cylinder motor has proved not only powerful but smooth running and easily cared for. There are many cars fitted with this type of motor that are designed to carry four and five passengers and they are performing their duty in a satisfactory manner. A four-cylinder motor 3¾ by 4 inches would, if correctly designed, give about 20 horsepower if run at 1,500 revolutions per minute, which would be a safe speed. This is ample power for a light car if excessive speed is not desired. There are many successful four-cylinder air-cooled cars on the market; air cooling has been proved successful beyond a doubt, as the success of a large number of makers shows. Most makers of vertical motors place the valve stems upward, some obliquely, and a few in a horizontal position. Cylinder wall thickness will have to be determined by the size of the cylinders, and then there is a wide difference of opinion about the matter. This is also true of flywheel diameters and weights.

THE REALM OF THE COMMERCIAL CAR



MOTOR TRANSPORT VS. STEAM, ELEC- TRIC, CANAL AND EQUINE SYSTEMS ↑ PART IV ↑

THE RURAL MOTOR BUS MET WITH INSTANT APPROVAL THROUGHOUT THE KAISER'S REALM



N MOTOR AGE bearing date of October 4 was published the third of a series of articles on motor transportation abroad, the part referred to dealing specifically with a comparison of horse and motor carrier vans for country use. The following is a continuation of this part:

It must not be supposed that because we have mentioned four horses and four vans as the measure of comparison between the capabilities of horses and motors that it will not pay to employ a motor on the work of two horse vans. This would be fallacious, because the motor van, as we will presently prove, not only does twice as much work as a pair of single-horse carrier vans, but will cost less than them when operated only on the work which they previously performed. The man, however, who exhibits enterprise sufficient to induce him to see dollars further than the tip of his nose and invest in a motor carrier because he is convinced by the preceding paragraph and by investigation of the economical results following upon the actual working of motor vehicles, is not the person one would anticipate allowing the motor to stand idle when he can hustle out more work for it to do, although it may have already earned him a good profit on the exchange from natural to mechanical traction. It is, moreover, easier to put a motor at new work than to adapt old established horse systems to the new system, because the carrier has a perfectly free hand and is not hampered by any ridiculous customs attaching to the horse services. Customs die hard to most things, but cause little trouble where motor carriers are concerned. Nevertheless, they require some forbearance, and unless provided for, as in the exemplar services already mentioned, may hinder the development of the motor. This

fact is mentioned so that readers may have no excuse for stating that we have not taken into account all the adverse circumstances likely to arise upon a sudden change from horses to motors. The public requires only that they and their goods shall be carried more expeditiously, comfortably and possibly cheaper than under the discarded system. This the motor provides for, so he is a weak man who is influenced by the apparent difficulties of a change into abandoning all idea of making it. While he is hesitating a smarter man will elbow him out of his opportunity. Whenever a change is made it must be abrupt individually. The ancient Aryan, when he abandoned the sled runners for circular pieces of solid wood, did not adopt one wheel at a time, keeping one runner on until he had made up his mind as to the efficacy of the invention. He made the change abruptly, transposing his clumsy sled into a faster cart. His descendants improved upon the idea by first using built-up wheels and then horses instead of bulky bullocks. Now even the horses have given way to the gasoline motor as a propulsive instead of tractive power. It was never but by accident that a motor vehicle in the infancy of the motor industry was assisted in its progress by a horse. The owner had not bargained for so retrograde, although a temporary mischance. Years of discretion have now heaped themselves upon the generation-old motor, so that it now never jibs but works hard all the days of a long life so long as it is fed properly, greased efficiently and not overloaded. Atlas himself could not bear the weight of the moon, as well as of the earth, but had to drop it.

Only the motor can keep pace with the exigencies of this bustling age which affects all classes—rich and poor, peasant, merchant and citizen—all of whom de-

mand and recognize in the motor carrier the best and speediest and cheapest means of transportation by road of themselves and their goods. That is the point which the cute carrier always considers he is nearly sitting upon, so that any relaxation will cause it to jump into his memory with distressing acuteness.

The motor carrier can manage from 90 to 120 miles daily with 2,000 or 4,000 pounds of freight and ten to fifteen passengers all day long. Any variation in load, however, affects it no more than in the consumption of fuel, if it is properly engined and is not called upon to perform more than it was built for. Whatever time is occupied in picking up loads and passengers before starting is caught up in the comparatively long, uninterrupted runs out or home.

When the business has increased so much as to warrant, or at the time of displacement of horses requires, the employment of two or more motor vans, the necessity of close maneuvering is not so great as in the foregoing examples. One motor van can usually then be engaged in feeding the other or others. It has been previously pointed out that there are very few businesses employing four-horse carrier vans which will not be in a position to enlist the services of a second motor van within a short period of employing the first and discarding horses. Two motor vans will carry more than five or six horse vans, so that it will not be necessary to wait for work for eight-horse vehicles before deciding to purchase two motors. Towns and villages previously inaccessible by reason of distance to horses working from the depot town and the towns served therefrom will be opened up, longer journeys will be taken and many new sources of traffic tapped that otherwise would undoubtedly remain dormant.



ARIES CARRIER VANS READY TO LEAVE THE GARAGE AT THE DAWN OF DAY

The arithmetic of the motor carrier is easily learned and pays for being learned when practiced. The following tables are the result of lessons of experience:

Daily greatest mileage of a horse.....	30
Daily greatest mean mileage of a motor....	120
Cost of a horse capable of travelling 30 miles daily with a carrier's load.....	\$ 250
Cost of a carrier's motor van to carry 2,240 pounds, including passengers....	1,750
Cost of a carrier's motor van to carry 3,360 pounds, including passengers....	2,250
Cost of a carrier's motor van to carry 5,600 pounds, including passengers....	3,000
Cost of a carrier's motor van to carry 6,720 pounds, including passengers....	3,250
Cost of a horse, van and harness.....	125
Cost of a 4,480-pound horse van with harness	150

Annual and mileage cost of running two 1-ton, single-horse vans averaging 20 miles each daily for 300 days per annum:

	Per annum	Per mile, cents
Two drivers at \$5 each per week	\$ 520.00	8.66
Lad for stable and errands at \$2.50 per week.....	130.00	2.16
Fodder for three horses, one spare, at \$2.50 each per week	390.00	6.50
Shoeing and veterinary at \$15 per annum per horse.....	45.00	.75
Repairs at \$20 per annum per vehicle	40.00	.66
Stabling	250.00	4.16
Insurance and incidentals....	15.00	.25
Depreciation of three horses at 20 per cent.....	150.00	2.50
Depreciation of two vehicles and harness, three sets, at 10 per cent.....	27.50	.45

Totals\$1,567.50 26.09

Similar cost of a 1-ton motor carrier's van averaging 40 miles daily:

	Per annum	Per mile, cents
Driver at \$8.75 per week.....	\$ 455.00	3.79
Repairs	125.00	1.4
Lubricating oil and gasoline..	220.00	1.83
Insurance	35.00	.29
Depreciation on capital at 15 per cent	262.50	2.18
Incidentals, stores.....	20.00	.16
Stabling	125.00	1.4
Tires, if rubber, as recommended, inclusive of tires on machine, when purchased and included in capital outlay	175.00	1.45
Totals	\$1,417.50	11.78

Annual cost of working two 1-ton single horse vans.....	\$1,567.50
Annual cost of working one 2,240-pound motor carrier.....	1,417.50

Annual saving of motor carrier..	\$ 150.00
Cost per mile by motor carrier.....	11.78
By two single-horse vans.....	26.09

Saving per mile by motor carrier....14.31

A 1-ton motor carrier will, however, easily perform 80 miles daily at a cost of \$1,852.50 per annum, or 7.67 cents per mile; and, therefore, do the work of four 1-ton, single-horse vans:

	Per annum	Per mile, cents
Driver at \$8.75 per week....	\$ 455.00	1.89
Repairs	175.00	.72
Lubricating oil and gasoline..	400.00	1.66
Insurance	35.00	.14
Depreciation at 15 per cent...	262.50	1.09
Incidentals, stores.....	50.00	.20
Stabling	125.00	.52
Tires, four sets, rubber, at 6,000 miles each, including set on vehicle when purchased	350.00	1.45

Totals\$1,852.50 7.67

The difference between the motor carrier and the horse carrier is that the mileage of the former can be doubled and the cost per mile actually thereby reduced 4.11 cents per mile, while the gross operating cost is only increased by \$435 per annum. On the other hand, the cost of running 40 more miles daily by horses increases the annual outlay to \$3,135, just double, and only reduces the cost per mile to 13.06 cents. There is no actual saving but rather a possible further increase by putting on the two additional horse vans for the expense of management of the service now amounting to four vans should strictly be added to the estimates.

It is not recommended, however, that the 1-ton motor carrier should be used to replace more than three 2,240-pound horse vans, as its capacity is somewhat limited should round trips be made. The 3,360-pound motor carrier is, therefore, suggested as a substitute for the four single-horse

vehicles or three two-horse 3,360-pound vans. The comparative running costs are as follows:

Motor carriers for 3,360 pounds freight, including passengers:

	Per annum	Per mile, cents
Driver at \$8.75 per week....	\$ 455.00	2.52
Assistant at \$5 per week....	260.00	1.44
Repairs	225.00	1.25
Tires at 3 cents per mile, 60 miles per day, 300 days per annum	540.00	3.00
Fuel, 8 miles to the gallon, at 20 cents.....	450.00	2.50
Lubricants, 100 miles to gallon, at 36 cents.....	64.80	.36
Insurance and incidentals....	62.50	.34
Depreciation at 15 per cent..	337.50	1.87
Garaging, nominal only.....

Totals\$2,394.80 13.28

Os previously pointed out, the annual cost of running four single-horse 2,240-pound vans is \$3,135, more by \$740 than the running charges on a 3,360-pound motor carrier for a year. The annual cost of operating three 3,360-pound, two-horse carriers' vans 20 miles each daily, 300 days per year, is approximately:

Three two-horse carrier's vans:

	Per annum	Per mile, cents
Three drivers at \$5 each per week	\$ 780.00	4.88
Stableman at \$4 per week....	208.00	1.15
Fodder for eight horses, two spares, at \$2.50 each per week	1,040.00	5.77
Shoeing at \$15 per annum per horse	120.00	.66
Repairs at \$25 per annum per vehicle	75.00	.41
Stabling	375.00	2.08
Insurance and incidentals....	40.00	.22
Depreciation on eight horses at 20 per cent.....	400.00	2.22
Depreciation on three vehicles and harness, at \$150 per set, at 10 per cent.....	45.00	.25

Totals\$3,083.00 17.09

The 3,360-pound motor carrier, therefore, effects an annual saving of \$688.20 over three 3,360-pound, two-horse carriers' vans.

It is just as well to give the carriers' motor van a capacity greater than either of the horse vehicles displaced if it is not intended to purchase at any time a



THE COUNTRY CARRIER VAN WITH ITS BIG LOAD AND BAGGAGE SPACE

second vehicle. It will then be able to deal with any increase up to 25 per cent on the original business. In the following table are, therefore, given the early running, standing and maintenance charges of a carriers' motor van having a capacity of from 4,480 to 5,560 pounds, including ten to fifteen passengers. It is an unusual size of van and is not recommended for general adoption outside combined freight and passenger carrying concerns:

Carrier's motor van of 4,480 to 5,560 pound capacity, including passengers:

	Per annum	Per mile, cents
Driver at \$8.75 per week.....	\$455.00	2.52
Assistant at \$5 per week.....	260.00	1.44
Repairs.....	250.00	1.38
Tires at 3.50 cents per mile, 60 miles daily, 300 days yearly.....	630.00	3.50
Fuel, 7 miles to the gallon, at 20 cents.....	514.40	2.85
Lubricants, 100 miles to the gallon, at 36 cents.....	64.80	.36
Insurance and incidentals....	90.00	.50
Depreciation at 15 per cent....	450.00	2.50
Garaging—nominal only.....

Totals\$2,714.20 15.05

The 4,480 to 5,560-pound carriers' motor van gives an economy annually of \$368.80 over the two-horse carriers' vans and \$420.80 over four single-horse carriers' vans. A still greater saving will be effected by the ability of the motor to carry a larger load per journey than either of the horse vans. If rubber tires are used on the front wheels and steel tires on the rear road wheels the tire bill will be reduced two-thirds—\$420. This system is only recommended where the motor will not be called upon to travel more than 12 miles per hour. Beyond this speed the amount saved in tires will be lost by increased wear and tear on the machine. In the winter months, in some parts of the country, steel tires on the rear wheels will have to be used, but no reduction in the average earnings of the vehicle need result therefrom, as 12 miles per hour is ample to give the economy mentioned in the foregoing motor exemplifications. Rubber tires will be used in the summer for level-

ing up the earnings. It will be noticed that there is reckoned only a nominal amount for garage—elaborate stabling will not be required for the motor, merely a covered shed and repair pit in the rear of the carrier's premises. A motor can be kept at the back door but horses cannot, the ammoniacal effluvia which they emit renders their close proximity to dwelling house obnoxious. The sum of \$125 was included in the 1-ton motor van's estimate merely as a comparison with the horse van estimates. If desired, such a sum may be added to the hauling charges of the other vans.

An even higher-powered carriers' van may be employed than those referred to, where they are intended to supersede half

a dozen or more horse vans of from 4,480 to 5,560-pound passenger and freight capacity, and they will have the assistance of a 2,240-pound motor van to help them out with light express work and on occasions when it is impossible, owing to the size of the business, for one van to visit all the towns or districts on the day's list. The heavy 6,720-pound passenger and freight motor carriers' van should only travel in the country up to 10 miles per hour if the depreciation from wear and tear is to be kept down to 15 per cent. It will, however, work longer days than the lighter vans, so will make the same average mileage of 60 miles daily. To cover 120 miles daily it will require about 15 hours, including stoppages.

In concluding the country carriers' section of these articles, detailed figures relating to the cost of running 6,720-pound motor vans are given:

6,720-pound passenger and freight motor carrier:

	Per annum	Per mile, cents
Driver at \$10 per week.....	\$520.00	2.88
Assistant at \$5 per week.....	260.00	1.44
Repairs.....	250.00	1.38
Tires, rubber on front and steel on back wheels, at 3.50 cents per mile for one-third of total mileage.....	210.00	1.16
Fuel, 6 miles to gallon at 20 cents.....	600.00	3.33
Lubricants, 80 miles to gallon, at 36 cents.....	81.00	.45
Insurance and incidentals....	110.00	.61
Depreciation at 15 per cent....	487.50	2.70
Garage, heavy and light vans.	250.00	1.38

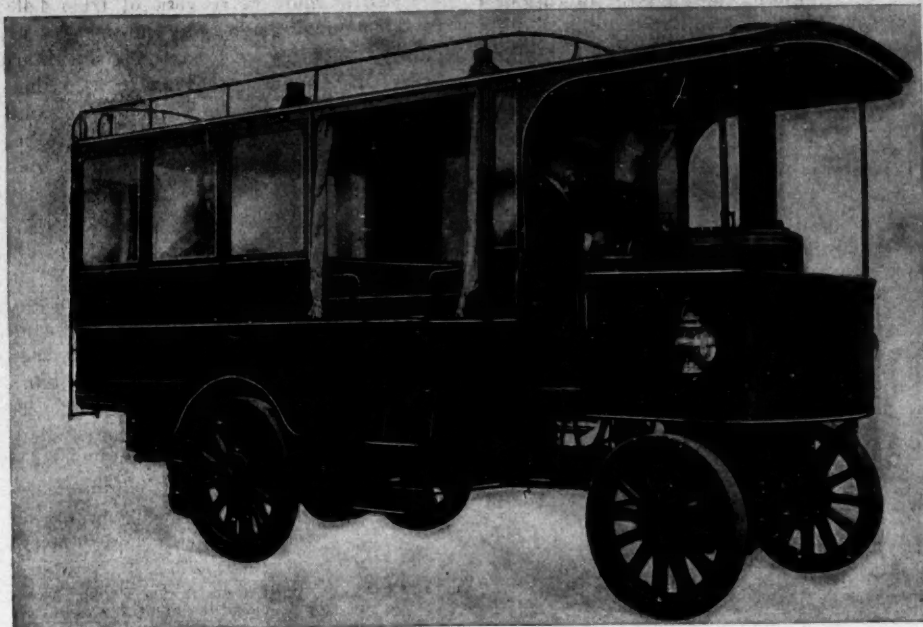
Totals\$2,768.50 15.33

The cost of operating a 4,480-pound passenger and freight two-horse motor van is very little more than the cost of running a 3,360-pound two-horse van on the same class of work, so that details are unnecessary.

A 6,720-pound carriers' motor van and 2,240-pound carriers' motor van together will absorb annually in running, standing

RECAPITULATION

	One 6720-pound and one 2240-pound motor van	Eight single-horse vans and twelve horses	Four single and three two-horse vans and fourteen horses	Six two-horse vans and sixteen horses
Capital outlay on the two motor vans.....	\$5,000.00	\$5,000.00	\$5,000.00	\$5,000.00
Value of horse systems, being amount realized on sale.....	4,000.00	4,450.00	4,900.00
Extra capital to be found to purchase the two motor vans.....	1,000.00	550.00	100.00
Cost of running system for first year.....	\$4,621.50	\$6,270.00	\$6,218.00	\$6,166.00
Cost of running the two motor vans, one at 60 and the light van at 80 miles per day....	4,621.50	4,621.50	4,621.50
Yearly saving by use of motors.....	\$1,648.50	\$1,596.50	\$1,544.50
Deduct extra capital required at start to purchase motors.....	1,000.00	550.00	100.00
Net economy of motors at end of first year....	\$ 648.50	\$1,046.50	\$1,444.50
Amount saved by motors second year.....	1,648.50	1,596.50	1,544.50
Amount saved by motors third year.....	1,648.50	1,596.50	1,544.50
Amount saved by motors fourth year.....	1,648.50	1,596.50	1,544.50
Capital value of motors.....	\$5,594.00	\$5,836.00	\$6,078.00
Amount credited to motors' account at end of fourth year, after providing for full cost of the two machines.....	\$ 594.00	\$ 836.00	\$1,078.00
Add 4 years' depreciation allowed for in annual charges and held as reserve fund to provide renewals.....	3,000.00	3,000.00	3,000.00
Cash in hand at end of fourth year.....	\$3,594.00	\$3,836.00	\$4,078.00
Value of remaining two years' life of motors..	2,000.00	2,000.00	2,000.00
Motor account assets at end of fourth year exclusive of second hand value of machines.	\$5,594.00	\$5,836.00	\$6,078.00



THE STEAM RURAL CARRIER IS RAPIDLY GAINING IN POPULARITY

and maintenance charges, \$4,621 on a capital outlay of \$5,000. They will perform the duties of eight single-horse vans, or four single and three two-horse vans, or six two-horse vans of 4,480-pounds' capacity. In the first case, they will effect an economy of \$1,649; in the second case, of \$1,597; and in the third case, of \$1,545 per annum, respectively. The capital outlay on horses, harness and vehicles in the first mentioned system will be \$4,000; on the second system, \$4,450; on the third system, \$4,900. Possibly one spare horse less might be managed in each system, but it is doubtful. In any event, the capital outlay on the horse system is not much below the motors.

Carrier readers will be influenced in discharging their horses for motors after a careful perusal of the recapitulation statement of account, shown at the bottom of the preceding page, as between motors and horses, after 4 years' work. By it they will find proof that a motor vehicle always pays for itself in less than 4 years from the economies effected. Any misgivings as to the advisability of a change from horses to motors owing to lack of capital will also be dismissed, for it is apparent that the extra capital required to purchase the motors is very small and can be borrowed and repaid within a year from the savings effected by the use of the motors. The account is based upon the replacement of the three-horse systems mentioned in the last paragraph. Similar accounts for any of the other exemplifications given previously will show as favorable results from the motors irrespective of the nature of the field of operation, or the nature of the management. Parties desirous of making efforts in this line will find the statements accurate.

To assist our readers in drawing up similar accounts with respect to any number of horse-vehicles it may be proposed to displace with motor carriers' vans,

we epitomize the estimates given in the preceding pages of these articles, viz:

Horse systems	Daily mileage	Capital cost	Annual per mile charges run, etc.	Cost
Two single-horse vans	40	\$1,000	\$1,567.50	26.09
Three two-horse vans	3,040 cwt.	2,450	3,083.00	17.09
Motor systems:				
1-ton carrier van	40	1,750	1,417.50	11.78
1-ton carrier van	80	1,750	1,852.50	7.87
30 cwt. carrier van	60	2,250	2,394.80	13.28
40-50 cwt. carrier van	60	3,000	2,714.20	15.05
60 cwt. carrier van	60	3,250	2,768.50	15.33

BUS SITUATION IN LONDON

The motor bus situation in London is growing interesting. From an analysis of the position it appears that there are 723 motor omnibuses on the London streets, an increase of thirty-three in a week. The largest owner is the Vanguard company, which owns 129. The manufacturing representation is interesting. There are 240 Daimlers, 201 Bussing, 158 Brunswick, 83 de Dion, and 41 Sterlings, the last-named a Scottish bus. But it is worth noting that 35 per cent of the total number is in hospital at the time of writing, thus showing the heavy upkeep expenses and the necessity to earn largely when running. As a sort of supplement to this the Vanguard company's annual report has been issued and balance sheet published. The writer can do no better than quote what an eminent financial writer has to say on the document. He says: "It throws no light on the point about which investors are most keenly interested—the question of maintenance and depreciation. The gross receipts for the period from March 27, 1905, to June 30 last were \$547,195, but the service was commenced with only five buses, and at the end of the period there were ninety-eight running, the average throughout being about thirty-eight. Traffic department expenditure—the actual cost of running,

presumably—is put at \$247,680, while maintenance and depreciation figure in one lump at \$245,450. But how much has been required for maintenance and what is allowed for depreciation there is no means of finding out. The net profit shown is \$78,410, and after placing \$20,000 to reserve, and paying a dividend at the rate of 10 per cent per annum, there remains \$4,765 to be carried forward. The ordinary dividend absorbs \$34,345, and the preference dividend \$19,300, but next year 10 per cent on the ordinary will require \$50,000, and the preference dividend \$60,000. It is no sort of guessing to suggest that the accounts have been presented in this way for a purpose which, in London, is said to be very transparent to those who are in the business and they make no bones about speaking of it, either, it is asserted.

A PARIS STREET SWEEPER

The city of Paris has just placed in service a motor sweeper and water cart, which has been supplied by the de Dion firm. The sweeping and watering operations are distinct and separate. There is a fine water spray in front of the brush which prevents dust from rising, and the brush lowers and rises, stopping with the latter operation. The brush is worked by a chain and covers a width of 5 feet 7 inches in its rotation. Watering is accomplished by gears at the back of the rear wheels, in the "Cinchamp" system favored by the city of Paris. The water flow is brought about by a flywheel acting on a piston opening or closing series of small holes. A centrifugal pump, worked by the motor, is attached to the tank which contains 500 gallons; 80 or 100 gallons per minute may be discharged over a width of 10 to 23 feet of road. A de Dion two-cylinder motor of 15 horsepower is fitted with a change-speed gear, in a water and dust-tight case, and the lubrication, under pressure, is automatically arranged for a distance of 250 miles without attention. Water circulation is made by a pump and the change speed gear, of the sliding pinion type, gives speeds of 3, 6½ and 10 miles per hour. Cardan transmission is throughout. One pedal brake acting on countershaft and one hand brake on back hubs are provided. Diameter of front wheels is 36 inches, rear wheels 40 inches. The weight, unloaded, is 6,880 pounds; loaded, 12,450 pounds. The machine can be turned in a road of 40 feet. The city of Paris is also experimenting with a combination dust and refuse carrier, water tank and sweeper, with the view of obtaining maximum efficiency from the vehicle, which otherwise could only be used in the summer. In this instance the water tank can be turned into a refuse carrier. Much comment made on these recent street sweepers accentuates the fact of economy of street space, speed of operation and increased sanitation over horse-drawn sweepers.



AMONG THE MAKERS AND DEALERS



Half Morgan & Wrights—It is announced that half of the immense product of Cadillac cars for 1907 will be equipped with Morgan & Wright tires, evidence of the popularity of the now Detroit-made tires.

Martin Moves—L. G. Martin, of Pittsburgh, has moved from 3994 Forbes street to 3923 Forbes street, where he has put up a new garage. He is agent for the Rambler and also handles a large line of supplies.

Dragon Plant Secured—John Kane Mills, president of the Dragon Automobile Co., has leased a large and fully-equipped factory in Philadelphia, to which the Detroit plant of the company will be moved as soon as feasible.

Pierce Ready Next Month—The George N. Pierce Co. has set November 15 for the date of the appearance of the 1907 model of the Pierce Arrow. On that date the new model will be shown at the Buffalo branch at 754 Main street.

Hills Gets Two Cars—Horace B. Hills has secured the Philadelphia agency for the Royal Tourist and Rochet-Schneider, and about November 15 will open an establishment at 130 North Broad street, alterations upon which are now in progress at that place.

Greer Again in Harness—Erwin Greer has severed his connection with the Greer Motor Co., of Chicago, and is in for himself now at 1446 Indiana avenue, where he has a motor car livery. He will re-establish himself on the row after the first of the year, when he will take on the agency for a well-known car.

Franklin in Chicago—Tracy Holmes, manager of the new branch the Franklin people have opened in Chicago, has secured temporary quarters at 1344 Michigan avenue in the north half of the store of Fred Pardee. The permanent Franklin home will be in a new building to be erected at 1450 Michigan avenue, just south of the Ford branch.

Dearth of Cars—Automobile dealers in Spokane say they are unable to get enough cars to supply the trade. More than ninety cars have been sold in Spokane this year and there are orders for thirty more. The real estate men selling properties in the suburbs of Spokane have pressed the cars into commission, and physicians are making use of them on hurry calls into the country.

Will Make Fawkes Tires—John MacMillan, of Milwaukee, and Charles G. Fawkes have withdrawn from the Milwaukee Rubber Works Co., and will establish a new factory for the manufacture of the Fawkes airless tires and other articles, patents for which they control. They are considering a number of propositions for locating. They are in no partic-

ular hurry to decide, but will accept the proposition of the city that offers them the best inducements. They are at present in Milwaukee and will remain there until they decide on a permanent location.

Hopkins Locates—L. A. Hopkins, former manager of the Apperson Brothers' New York branch, has been made manager of the St. Louis Car Co.'s branch in that city, where the American Mors will be handled temporarily from 66 West Forty-third street.

Rolls in America—C. S. Rolls, the well-known British motorist and aeronaut, arrived in New York last Thursday. The object of his visit to this country is to establish an American agency for the Rolls-Royce car. His headquarters are at the St. Regis.

Winans Goes to Coast—E. D. Winans, former manager of the Michelin Products Selling Co., left New York for San Francisco last Thursday. He will spend the winter in California. His address will be care of the George P. Moore Co., 592 Golden Gate avenue, San Francisco.

Will Make Entire Machine—It has been decided by the Hendee Mfg. Co. to make everything that goes into the Indian motor cycle in its own factory at Springfield, Mass., instead of having the engine, carbureter, etc., built outside. The 1907 line will consist of single and double-cylinder motor cycles, tri-cars, delivery vans and front and rear tandem attachments. Delivery will commence in January.

Long Trip in a White—Harry Grece, Michigan manager for the White steamer, has just returned from a trip through the state placing agencies. At Battle Creek he appointed the American Motor & Cycle Co. agent for the steamer; at Kalamazoo A. E. Campbell was chosen; at Grand Rapids the Lubeck Automobile Co.; at Traverse City he picked Donald Stewart; and at Ludington the Butters Automobile Co. Grece made the trip in a White steamer.

Ollier's Plans—L. J. Ollier, manager of the new branch established by R. M. Owen & Co. in Chicago for the purpose of handling the Reo and Premier, has made his plans to locate permanently in the old Peerless store at 1344 Michigan avenue, now occupied by the Packard agency, as soon as the latter vacates to move into the new building now being erected for it. At present Ollier is located at 1404 Michigan avenue where Jerry Ellis used to sell the Frayer-Miller.

Allison Goes to Chicago—H. M. Allison, who for several years has been one of the active department heads of the Packard Motor Car Co., and who, recently, as manager of the commercial vehicle department, has given special attention to the development of traffic vehicles, has sev-

ered his connection with the parent Packard company to become a member of the Chicago Motor Car Co., handling Packard cars in Chicago. Mr. Allison left Detroit this week and immediately assumes his new role in the windy city.

Cook Sells Out—R. W. Cook has disposed of his interest in the Cook & Stoddard Co., Washington, D. C., agent for the Locomobile, White, Franklin, Cadillac and Baker, to J. H. Stoddard. Mr. Cook has gone to Chicago, where he will handle the Royal Tourist.

Klauder in Temporary Quarters—Francis Klauder, well known in the quaker city, has established at the Bellevue-Stratford garage a temporary agency for the sale of the C. G. V. car in Philadelphia and adjacent territory, pending the securing of suitable showrooms and offices on the row.

Big Place for Pittsburgh—The Majestic Amusement Co., of McKeesport, Pa., has just awarded the contract for a brick and terra cotta building to be erected in the busiest part of Fifth avenue at a cost of \$25,000. One floor will be used for a garage and the other for a roller skating rink.

Rainier Increases Plant—The Rainier Co., of New York, has added to its plant the three-story and basement building at 235-237 West Fiftieth street for use for garage purposes. The new garage is diagonally across the street from the present quarters and will raise the storage capacity to 280 cars.

Moskovics' Change—F. E. Moskovics has resigned his position as vice-president of the Frayer-Miller Motor Car Co., of New York. This step was necessitated by his present duties in connection with the firm of Brandenburg & Co. Mr. Moskovics hereafter will devote his undivided attention to the different parts marketed by Brandenburg & Co. and will spend most of his time in the west.

Show for Pittsburgh—The Pittsburgh Automobile Dealers' Association will hold a meeting soon to formulate plans for holding a show this winter. It probably will be held in February. The dealers are taking a firm hold of this matter and propose to have a show of their own, at any rate, and to put a quietus on the complaint that there is no longer any concerted action taken in anything that pertains to motor-ing in Greater Pittsburgh.

Decision Favorable to Lavigne—The Lavigne Mfg. Co., of Detroit, which manufactures mechanical lubricators, reports that the suit brought against it by the Detroit Lubricator Co. has been decided in favor of the former. The Detroit Lubricator Co. claimed certain patents, which were the result of Mr. Lavigne's work before he severed his connection with the

Detroit people. The court dismissed the case, which was brought to compel Lavigne to assign his rights in his own invention.

Iams Now Ready—The Iams Motor Co., the newest firm in Pittsburg, is now ready for business in its big garage at 5086 Center avenue, where it will handle the Royal Tourist.

Another Building for Pierce—The George N. Pierce Co., of Buffalo, has filed plans for an office building, to be erected at 1661 Elmwood avenue, Buffalo. It will cost \$50,000.

Places Haynes Agency—The Shepard Co., of Providence, R. I., will represent the Haynes in Rhode Island for 1907, C. S. Henshaw having closed with them during the past week.

Has Two More—The Zim-Rock Motor Co., of New York, former agent for the Stoddard-Dayton, now handles St. Louis and Pungs-Pinch cars. W. G. Horick is the new manager, Mr. Rocket having retired.

Kilgore's New Branch—The Kilgore Pneumatic Shock Eliminator Co., of Boston, has opened a branch salesroom and equipped a shop at 1773 Broadway, New York city. Albert Lodge, from the home office, is manager.

Good Tire Record—Although it is 3 months since the Ajax-Grieb Rubber Co. started to give a 5,000-mile guaranty with every Ajax tire sold, it is said it has been necessary to make only eleven replacements up to this time.

Newkirk in Nevada—Jed Newkirk, of bicycle racing fame, has joined with H. T. Kutzkau and secured the Nevada agency for the S. & M. Simplex car and the R. & P. traction and road tires for Nevada, with headquarters at Tonopah.

New Tire—J. C. Smith, of Gouverneur, N. Y., has invented what is called a resilient coiled steel wire tire for motor cars. The large wires are closely arranged in a coil, and it is said the tire cannot slip and that it will be good for winter use on motor cars.

R. D. Alliger, Jr., Dead—Richard Alliger, Jr., a partner of the late firm of Brandenburg Brothers & Alliger, died at his home in Syracuse, N. Y., October 7 and was buried at Wappinger Falls on the 9th. Mr. Alliger long had been ailing and several trips to the south failed to benefit him any. He was 30 years of age and was regarded as an exceptionally bright business man.

Locates Selden Factory—The Selden Motor Vehicle Co., recently organized, will operate a plant at Despatch, N. Y., and will be incorporated with a capital of \$500,000. Work has already begun on the Despatch building, which will be a modern factory, 400 feet long and 60 feet wide, with two wings 120 feet long. Among the men interested in the new company are L. A. Fisher and A. Snyder, of the Buffalo Gasoline Motor Car Co.; George B.

Selden, George C. Foster, Gilbert E. Mosher, Frank D. Russell and R. H. Salmons, all of Rochester.

Dinner for Show People—The show committee of the A. L. A. M. gave a luncheon last Thursday at Cafe Martin, New York, to the staff and employees of Madison Square garden in recognition of the splendid work at the last show.

Berliet Locates in Gotham—The American Locomotive Motor Car Co.'s New York headquarters has been moved to the big garage at the northeast corner of Broadway and Sixty-second street, where W. A. Evans has been installed as manager under General Manager Otto. James J. Joyce, the former manager, has been made superintendent of the company's Berliet factory at Providence, R. I.

New Wayne Agencies—New agencies placed by the Wayne Automobile Co. are as follows: Freed & Branford Automobile Co., Salt Lake City, Utah; Automobile Exchange, Birmingham, Ala.; Benton Harbor Bicycle & Auto Works, Benton Harbor, Mich.; J. C. Carpenter, Chester, S. C.; Lothrop-Davis Co., Tonopah, Mo.; J. D. Peck, Peckville, Pa.; D. W. Pales, Guayama, Porto Rico; Selma Gun & Key Co., Selma, Ala.; L. W. Brown, Elkland, Pa. They will handle the 1907 line.

Publicity for A. L. A. M.—Announcement is made by Marcus I. Brock, assistant general manager, that a new department had been added to the Association of Licensed Automobile Manufacturers. A department of advertising and publicity, connected with the mechanical branch, traffic department, patent department and agency department will be an important addition to the association. H. T. Clinton will be the manager, but Arthur N. Jervis retains his connection with the association.

Space Eagerly Grabbed—The big garage at the northeast corner of Broadway and Fifty-seventh street, New York, has been cut up into sales, show and storage rooms. So far the Atlantic Motor Car Co., Stoddard-Dayton, the Renault agency, and Covill & Crosby, American, have reserved first floor locations, while A. Neubauer's Palais de l'Automobile, Delaunay-Belleville, occupies most of the second floor. The third and fourth floors are divided among the motoring tenants for general storage use.

New Rubberneck Enterprise—Several Indianapolis newspaper and business men have in contemplation, the establishment of a sight-seeing company in Indianapolis, to begin operations in that city early in the spring. Although Indianapolis is said to have the finest streets of any city in the country and abounds in places of interest to sight-seers, there has not been any previous movement to organize a sight-seeing company. It is planned to purchase a fifteen or twenty-passenger car and add to the service as the demands require. The fare, it is expected, will be

50 or 75 cents a round trip, two trips to be made daily. The company has not yet been incorporated.

Michelin Branch in New York—The Michelin Products Selling Co. has opened a Michelin tire agency in St. Louis at 3804 Olive street, with H. L. Doyle in charge.

Morley Changes—After closing a satisfactory season as eastern representative of Hayden Eames, Cleveland, Bert Morley has resigned to accept the position of sales manager of the Ferro Machine & Foundry Co., of Cleveland, O.

Tryout for American—The 1907 model American runabout was given a tryout by a drive from Indianapolis to New York via Boston and back to Boston. Some 1,800 miles was covered in 4 days, including a stay over in New York for the Vanderbilt race.

Spokane Doings—The Rose Automobile Co., of Spokane, Wash., handling the National and Mitchell, has awarded a contract to O. J. Davis for a garage, 100 by 100 feet, to cost \$10,000. It will be fitted with reception rooms, lounging rooms for chauffeurs and a modern machine shop. In these the equipment will cost \$5,000. J. W. Hays has made a contract with the Northwest Motor Co. to erect a garage, 49 by 150 feet, to cost \$12,000. H. E. Rector will be manager.

Wayne Company Spreading Out—The Wayne Automobile Co. will erect a large addition to its plant. The new structure will be 56 by 214 feet on the ground, and three stories in height, giving something over 35,000 additional feet of floor space. A new power house will be erected, and an independent machine shop added for the production of parts. With a view to ultimately manufacturing every accessory entering into a car, the Wayne company has purchased 5 acres of land adjoining its plant, thus giving sufficient territory for consummation of the plans outlined by the company.

To Make the Eureka—Capitalized at \$50,000 the Eureka Motor Co. has been incorporated at Seattle, Wash., and will be the first on the North Pacific coast to build motor cars. The incorporators and officers are: President, A. D. Campbell; vice-president and general manager, F. A. Mitchell; treasurer, James H. deVeuve; secretary, H. H. Harriman; trustees, J. C. McMillan, C. O. Birney and W. J. Grambs. The company has purchased the shop, machinery and location of the Seattle Mfg. & Supply Co., 1409-13 Broadway, and will erect a two-story brick building with basement, 114 by 145 feet, on the site of the present building. The concern will do general repair work aside from the construction of the Eureka automobile. The company has secured the trans-Mississippi rights for the use of the Duo motor, and will build the frame and engine. Manager Mitchell is the practical man of the company, and will have direct supervision of the works of the new company.



VIEW OF UNION LAKE DISTRICT, SEATTLE, WASH., BEFORE THE REGRADING STARTED

Wagner Sails for Home—Louis Wagner, the Vanderbilt cup winner, after a round of congratulatory wining and dining, slipped away quietly on a German liner on Sunday of last week.

Car for Ridgway—Director of Public Safety Frank Ridgway is to have a white motor car—an emblem of purity, his associates call it—with which to run down criminals and look up evil doing in general. It will cost \$6,000 and is the result of the agitation by the city dads regarding giving all the heads of departments motor cars as being the surest and swiftest way to aid them in their work.

Cobe for President—The nominating committee of the Chicago Automobile Club has named the following ticket to be voted on at the annual meeting to be held November 8: For president, Ira M. Cobe; first vice-president, Frank H. Pietsch; second vice-president, Harry J. Powers; treasurer, T. J. Hyman; secretary, Sidney S. Gorham; directors, John Farson, S. K. Martin, Jr., Joseph F. Gunther, B. H. Marshall, L. E. Myers and A. F. Banks.

Road Trials for Lytle—It is announced that Herbert Lytle, who drove a 90-horsepower Pope-Toledo in the eliminating trial, will soon start on a notable series of record-breaking attempts in one of the 1907 Pope-Toledo touring cars, beginning with a run from Philadelphia to New York, followed by round trips between New York and Boston and New York and Chicago. The New Jersey authorities are said to have issued orders to stop Lytle's run through that state.

Motor Cycle Hill-Climb—The Chicago Motor Cycle Club held a hill-climb at Algonquin, Ill., last Saturday, using Perry hill, which was the scene of the morning contest for motor cars last September. The Beecroft formula—multiplying the cylinder dimensions by the time and dividing the product by the weight—was used, returning as winner C. Blankenheim, of Whiting, Ind., who went up the ¼-mile incline in 30 seconds, giving him a rating

of 1.65 as against 1.78 made by C. W. Van Sickle, on an Indian, who also made the fastest time of the fourteen riders—26 seconds. Blankenheim rode a Torpedo.

Grand Duke's Car—A motor car with novel coachwork has just been completed in Paris for the Grand Duke Alexander of Russia. It is known as a coupe trois-quarts limousine. The driver's seat is protected at the sides by glass. Inside there are three rear seats, two seats back to back with the driver and a strapontin. The rear seats may be extended and thus form a couple of comfortable beds. There is a complete medical outfit, tables, lamps, writing appliances and other comforts. On the roof at the rear are two seats back to back protected by hoods for the servants. This is presumably the first time such an arrangement has been contemplated and carried out. The motor car is not intended to do high speeds. In fact, with such an arrangement at the rear high speeds would be dangerous. Twenty-five miles an hour will be the highest attempted. The entire vehicle weighs about 2½ tons.

Original Road Hog—An illustration of the meanness of human nature of some persons was given to Gerard S. Foster, of Utica, who has sworn out a warrant for the arrest of a fellow who pointed a revolver at him. Mr. and Mrs. Foster, little daughter, child and nurse, were ascending a hill in a motor car when they caught up with a buggy which would not get out of the way but went on a zig-zag course so as to keep the machine behind it. Mr. Foster finally succeeded in passing the buggy, but the men whipped up their horse and passed the car, slashing at Mr. Foster with the whip as they went by. When the car caught up with them one of the men pointed a revolver at Mr. Foster and all along the road, when the man thought the car was getting too close, the revolver was brought into play. Soon another motorist happened along and Mr. Roberts sent him to find some officers, but the men in the buggy, suspecting this, turned their

horse on a cross road and disappeared. Mr. Foster has given a description to the police and will go to the limit to prosecute them.

Non-Stop Run—A non-stop engine run was made last week from Pittsburg to Johnstown, Pa., in a Stevens-Duryea touring car, with Tom Dunn, of the Banker Brothers Co., at the wheel. The car left Pittsburg at 12:03 p. m. and reached Johnstown without a single stop, although some very bad roads and heavy hills were encountered on the run.

On Long Tour—From Wenatchee, Wash., known as "the land of the big red apple," W. S. Gehr and his wife and George Canfield and his wife and son are making a tour of 12,000 miles in a touring car. They were in Spokane a short time ago on their way east, the itinerary taking them due east to the Atlantic coast, thence south into Florida, westward to southern California and to Wenatchee by way of the Pacific coast.

Novel Demonstration—An idea of the size of the oval funnels on the second of the gigantic Cunarders, the Mauretania, was obtained recently when the big vessel was launched at Wallsend-on-Tyne, England, when motor cars were driven two abreast through three of the four funnels which were laid in a row, forming a tunnel. The funnels are 17 feet 6 inches by 23 feet 6 inches, and when in place tower 120 feet above the load water line.

Every Little Helps—Seattle is probably generally known throughout the land as a very hilly city. This is in a large measure true. Like Rome, it was built on seven hills. But Seattle will do more than Rome ever thought of. It will remove many of these hills, leveling the city to a great extent. The accompanying photograph was taken from the rear veranda of the Washington hotel, which overlooks the Union lake district. In a few months this view of the district will not be obtainable. The hill at this point is close to 100 feet high, and prior to starting the work sloped in the opposite direction, about the same as can be seen in the foreground of the picture. Thousands of tons of dirt are being removed here alone. As this work covers several blocks, and the height of this hill alone is considered, it can readily be conjectured what the work means to the motoring interests.

Many Trades Represented—C. W. Kelsey, eastern sales manager of the Maxwell-Briscoe Motor Co., has been commenting on the large number of different trades and professions which are represented in motor car factories, and finds there are more than thirty different trades pursued in each factory, and a number of other skilled help in clerical and office lines also required. The trades represented include designers, draftsmen, chemists, pattern-makers, foundrymen, moulders, core-makers, sheet metal workers, carpenters, tool-makers, general machinists, blacksmiths,

brass finishers, assemblers, platers, grinders, upholsterers, wheelwrights, painters, decorators, burnishers, electricians, firemen, etc.

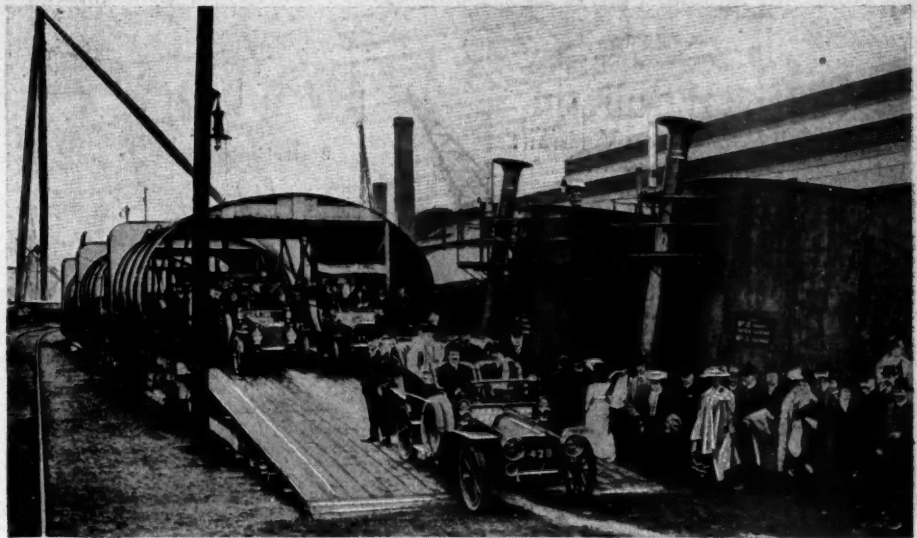
Fall Ride for Kids—Forty children from the Children's Orphan Home in Kansas City, Kas., were recently given a ride in that city by eight motorists. After the ride there were refreshments. The affair is to be made a regular event.

Unique Case—The fact that a motorman raced with a motor car is set up as a claim for damages in a suit recently filed against the Metropolitan street railway of Kansas City. E. H. Bostel, who was riding in the front vestibule, was injured when street car and motor car collided. He says the car was running at 25 miles an hour and that the motorman did not want to be outdistanced. He asks \$1,010.

Travels 6,000 Miles—Frank Moore, of Walla Walla, son of former Governor Miles C. Moore, of Washington, has just finished a motor car trip of more than 6,000 miles, 2,600 of which was made in 20 days. He made the trip in a 20-horsepower four-cylinder Franklin, starting at Tia Juana, Mexico, to Waneta, B. C., crossing the United States from south to north in 20 days' actual traveling, the best run being 200 miles, the distance from Rosebury, Ore., to Portland.

Kansas City Wakes Up—The first move for municipally-owned motor cars in Kansas City was taken several days ago, when the park commissioners authorized the inspection of runabouts with a view to purchasing one for W. T. Dunn, superintendent of parks. Agitation is also going on in the water department for the purchase of runabouts for the inspectors there. Still another inquiry has been made by the police department, which has in mind, it is understood, the purchase of an ambulance. On account of the long runs necessary in most of the cases, the move is looked upon with favor by the surgeons, for the runs are grueling on the teams.

Town Test—The town carriage competition of the Automobile Club of Great Britain and Ireland is a test of vehicles designed for town work purely and so fitted with landaulet bodies and the usual concomitants of luxurious motoring. The daily run for a fortnight was 30 miles out of and back to the Wolseley company's big garage at Westminster, marks being awarded for reliability, appointment, absence of vibration, smokelessness, silence, appearance, etc. The entrants included two White steam cars, a 40-horsepower Napier, 14-18-horsepower Spyker, 12-16-horsepower Wilson-Pilcher, 12-horsepower Georges-Richard, 15-horsepower Siddeley, two 20-horsepower Lanchesters, four 8-16-horsepower Electromobiles, 14-16-horsepower James and Browne, 28-horsepower Ariel Simplex, two 14-horsepower Georges-Richard, 20-horsepower Pilgrim, 14-horsepower C. G. V., 16-20-horsepower Beeston Humber, 20-horsepower Dennis, 6-horse-



MOTOR CARS DRIVING TWO ABREAST THROUGH FUNNELS OF A STEAMER

power Electric, 10-horsepower Adams-Hewitt, 24-horsepower Germain, 22-horsepower Berliet, and 10-14-horsepower Renault.

Banquet for Race Winners—A banquet is being organized in Paris to fete the winners of the various motor car races in 1906. Three great speed contests, the grand prix, the Ardennes circuit and the Vanderbilt cup, have been run within the space of 100 days and each race has been won by a Frenchman in a French car—Renault, de Dietrich and Darracq. The result is held to prove the great vitality of the French industry and the enormous advance held by France over all rivals.

New Idea Regarding Chauffeurs—Seymour P. White was recently elected treasurer of the Automobile Club of Buffalo to fill the vacancy caused by the resignation of Charles Clifton, who went to Europe for his health. It is quite possible that the Automobile Club of Buffalo will establish a chauffeurs' reference bureau for the benefit of its members. The idea is to have every chauffeur register with the club, giving a record of his age, experience, habits, etc., together with reference, which will be investigated and, if satisfactory, situations will be obtained with members of the club.

New Home for New Yorkers—An important move has been made by the directors of the New York Motor Club in deciding upon new quarters for that organization. November 1 the club rooms will be situated at 300 West Fifty-eighth street, close to the park circle in the restaurant and hotel building known as Reisenweber's. Several radical changes in the system of conducting the club were made and it was decided to hold the first of the season's club smokers on the evening of Thursday, November 1. On the following day a new series of club luncheons will begin at the new headquarters, and it is expected that these luncheons will prove to be the favorite time and place for daily meetings by those promi-

nent in the motor car trade and industry. It was also decided by the directors that, in spite of all reports to the contrary, the economy test is to be held again this year, on or about the middle of November.

Thomas to Race Abroad—E. R. Thomas has declared it is his intention to send his three racing machines to foreign climes after some of the big prizes. "I am confident that my cars can beat those foreign machines," said Mr. Thomas. "I am going to employ the same drivers, all of whom are foreigners, and among whom is Le Blon, the Frenchman, and send them to France and Belgium to compete in the grand prix and the Ardennes.

Discuss Wood Alcohol—Wood alcohol manufacturers who compose the National Wood Chemical Association, representing a capitalization of \$20,000,000, met in Buffalo recently for a dual purpose. One was to consider the ways and means of meeting conditions created by the new legislation on wood alcohol and the other was to discuss the terms of a proposed contract with the Wood Products Co., of Buffalo, for refining the crude products of the manufacturers.

Want Cash Road Tax—The rural mail carriers of Eaton county, Mich., in session in Eaton Rapids, took another step along the line of road betterment in Michigan when they decided that if one-half the present road tax were paid in money and judiciously expended the state would have far better roads than under the present system. They also decided to work for this improvement. The sentiment of the meeting seemed to be that, although much has been done along the line of highway improvement in the state, there is still plenty to be done. It was also suggested that not one-half the assessed labor on highways was actually performed. The rural carriers of the state have always been willing to co-operate with the motor car owners and now intend to forge ahead by working for the cash road tax.

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